SHARP®

LASER PRINTER
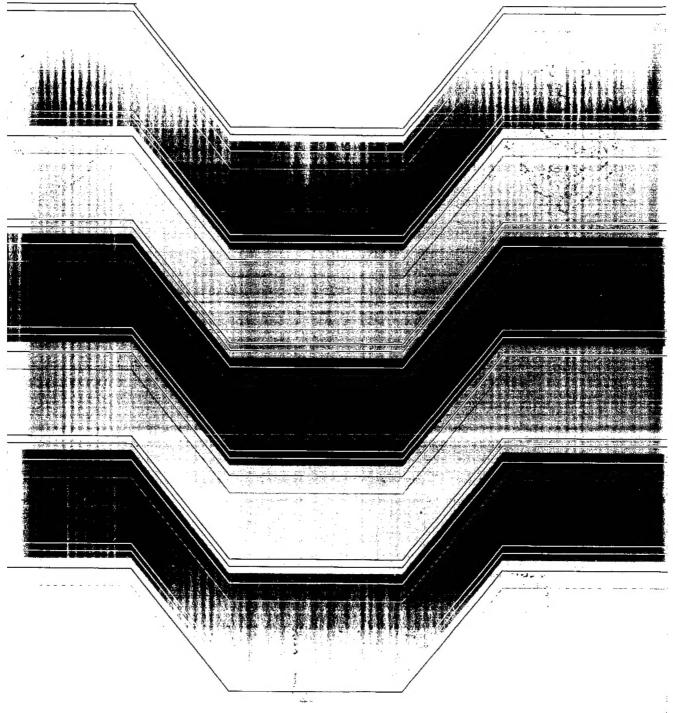
MODEL
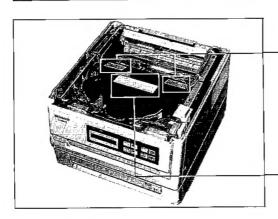JX-9500E
JX-9500H

OPERATION MANUAL/PROGRAMMING MANUAL

At the production line, the output power of the scanner unit is adjusted to 0.51 MILLI-WATT PLUS 20 PCTS and is maintained constant by the operation of the Automatic Power Control (APC).
Even if the APC circuit fails in operation for some reason, the maximum output power will only be 15 MILLI-WATT 0.1 MICRO-SEC. Giving and accessible emission level of 42 MICRO-WATT which is still-less than the limit of CLASS-1 laser product.

Caution
This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product.
Refer all servicing to qualified personnel.

NEVER OPEN THE COVER	NE JAMAIS OUVRIR LE COUVERCLE
ABDECKUNG NIEMALS ÖFFNEN	NUNCA ABRA LA TAPA

DANGER
DO NOT OPEN THE COVER.
CLASS 3b INVISIBLE LASER
RADIATION EXISTS INSIDE THIS UNIT.

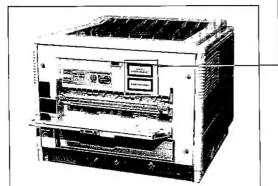| VARNING	CAUTION	VORSICHT	ADVARSEL	VARO!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.	INVISIBLE LASER RADIATION, WHEN INTERLOCKS DEFEATED AND TONER-DEVELOPER CARTRIDGE REMOVED.	UNSICHTBARE LASERSTRAHLUNG, WENN INTERLOCK ÜBERBRÜCKT IST UND TONER-SOWIE ENTWICKLUNGSEINHEIT ENTFERNT SIND.	USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKER-HEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLING.	AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER-SÄTEIL. YLLE. ÄLÄ KATSO SÄTEESEEN.

CLASS 1 LASER PRODUCT

LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

LASER KLASSE 1

The foregoing is applicable only to the 220V model and 240V model.

VAROITUS! LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTÖOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.

VARNING – OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FÖR OSYNLIG LASERSTRÅLNING, SOM ÖVERSKRIDER GRÄNSEN FÖR LASERKLASS 1.

THE EQUIPMENT SHOULD BE INSTALLED NEAR AN ACCESSIBLE SOCKET OUTLET FOR EASY DISCONNECTION.

The foregoing is applicable only to the 220V model and 240V model.

⚠ CAUTION

- Do not touch the photoconductive drum. Scratches or smudges on the drum will cause dirty printouts.

- The fusing unit is hot. Exercise care when inspecting this area.

- When using the power switch, do not switch the Laser Printer rapidly on and off. After turning the Laser Printer off, wait 10 to 15 seconds before turning it back on.

Beim Anschalten dieses Gerätes an Datenverarbeitungsanlagen ist sicherzustellen, daß die Gesamtanlage den jeweiligen technischen Vorschriften entspricht.

This apparatus complies with the requirements of EN 55014, 02.1987 and BS 800:1988.

Dieses Gerät stimmt mit den Bedingungen der EN 55014, 02.1987 überein.

Cet appareil répond aux spécifications de la EN 55014, 02.1987.

Dit apparaat voldoet aan de vereiste EN 55014, 02.1987.

Apparatet opfylder kravene i EN 55014, 02.1987.

Questo apparecchio è stato prodotto in conformità alle EN 55014, 02.1987.

Αὐτή ἡ συσκευή τηρεῖ τις προδιαγραφές τῆς EN 55014, 02.1987.

Este aparelho responde às especificações da EN 55014, 02.1987.

Este aparato cumple las especificaciones de la EN 55014, 02.1987.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

GREEN-AND-YELLOW:	Earth
BLUE:	Neutral
BROWN:	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows. The wire which is coloured **GREEN-AND-YELLOW** must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol ⏚ or green-and-yellow.

The wire which is coloured **BLUE** must be connected to the terminal which is marked with the letter **N** or coloured black.

The wire which is coloured **BROWN** must be connected to the terminal which is marked with the letter **L** or coloured red.

This apparatus must be protected by a 13A fuse in the mains plug or distribution board.

"WARNING: THIS APPARATUS MUST BE EARTHED"

TRADEMARK ACKNOWLEDGEMENTS

Diablo 630/630 ECS is a trademark of Diablo Systems, Inc.
Epson FX-80 is a trademark of Epson America.
IBM Graphics Printer and IBM Proprinter are trademarks of International Business Machines Corporation.
HP LaserJet series II is a trademark of Hewlett-Packard, Inc.
MS-DOS is a trademark of Microsoft Corporation.

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OPERATIONS

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INTRODUCTION
SETTING UP
PRINTING
SETTING THE MENU ITEMS
GENERAL INFORMATION
APPENDIX
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1. INTRODUCTION

UNPACKING

Check that your Laser Printer comes with the items shown below:

Toner cartridge

Photoconductor cartridge

Roller cleaner

Power cord

Charger cleaner

Developer cartridge

Toner collecting container

Operation manual/
Programming manual

Laser Printer
(paper cassette
installed)

NOTE:
*Save the carton and packing
materials. They should be used
to repack and protect the Laser
Printer if it must be shipped for
servicing.
*The charger cleaner is used
for maintenance. Store them in
suitable places.

Improper installation may damage the Laser Printer. Please note the following during initial installation and whenever the Laser Printer has been moved.
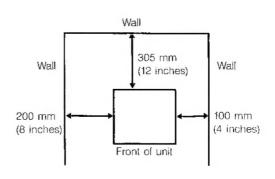
1. Be sure to use the rated voltage from a properly grounded wall outlet only.
2. Do not install the Laser Printer in areas that are:
● damp or humid,
● exposed to direct sunlight,
● extremely dusty or smoky,
● poorly ventilated,
● subject to extreme temperature or humidity changes, e.g. near an air conditioner or heater.

3. Place the Laser Printer on a firm, level table or desk with enough space to allow you to insert the paper cassette and to manually feed the paper.
4. To ensure proper operation and ventilation, leave at least as much space on each side as shown below.
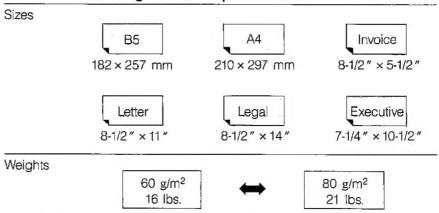
PAPER TYPES AND SIZES

Standard Papers

● Automatic Feeding from the Paper Cassette

Sizes

B5	A4	Invoice
182 × 257 mm	210 × 297 mm	8-1/2″ × 5-1/2″

Letter	Legal	Executive
8-1/2″ × 11″	8-1/2″ × 14″	7-1/4″ × 10-1/2″

Weights

60 g/m² 16 lbs.	⟷	80 g/m² 21 lbs.

*The A4 size cassette is a standard accessory on your Laser Printer. Cassettes in other sizes are available as options.

● Manual Feeding

Sizes   Same as automatic feeding.

Weights

60 g/m² 16 lbs.	⟷	130 g/m² 34 lbs.

*Papers with weights from 80 g/m² to 130 g/m² (21 lbs. to 34 lbs.) can be used only with face up output.

*A4 (210×297mm) is the maximum size for paper weighing more than 105 g/m² (28 lbs.).
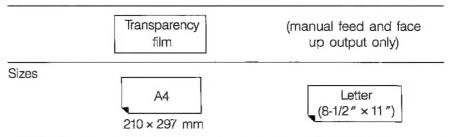
Envelopes

- **Manual Feeding**

Sizes

International DL	International C5
110 × 220 mm	162 × 229 mm

Commercial 10 (Business)	Monarch
4-1/8″ × 9-1/2″	3-7/8″ × 7-1/2″

Weights

60 g/m² 16 lbs.	⟷	90 g/m² 24 lbs.

*Envelopes can be used only with face up output.

*An optional envelope feeder is available for continuous feeding of up to 40 envelopes.

*Do not use envelopes with metal tabs, snaps, windows, strings, or other attachments, as it may result in damage to the Laser Printer.

Special Papers

Transparency film	(manual feed and face up output only)

Sizes

A4	Letter (8-1/2″ × 11″)
210 × 297 mm	
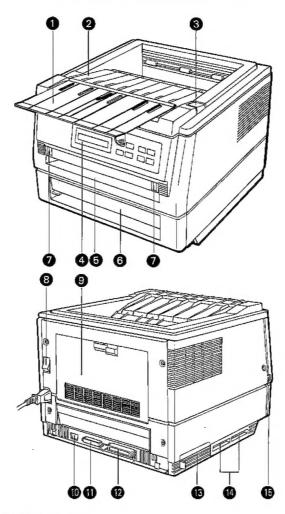
*Special papers can be used only with face up output.

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PART NAMES AND FUNCTIONS

❶ Extension Tray
Fold out to receive legal size paper.

❷ Face Down Tray
Collects the printed paper face down.

❸ Upper Unit Release Button
Press to open the Laser Printer.

❹ Operation Panel
Contains the indicator lamps, operation keys, and display.
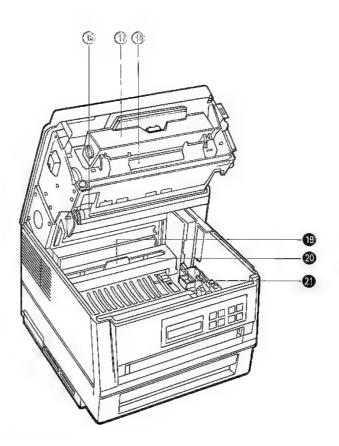
❺ Manual Feed Slot
Special papers, envelopes, and paper not in the cassette can be fed through the manual feed slot.

❻ Paper Cassette
Holds up to 250 sheets of paper.

❼ Envelope Feeder Mounting Holes
Insert the hooks here to install optional envelope feeder.

8 Power Switch

Press to turn the Laser Printer power on and off.

9 Face Up Tray

Special paper and envelopes fed through the manual feed slot are output here.

10 Connector for Optional Second Cassette Unit

11 RS-232C Serial Interface

12 Centronics Parallel Interface

13 Expansion Memory Slot Cover

Open the cover to insert optional Expansion Memory.

14 Font Card Slots (A, B)

Accept optional font cards which provide additional font selection.
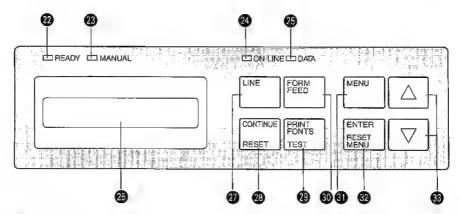
15 Connector for Optional Envelope Feeder

16 Photoconductor Cartridge

17 Toner Cartridge

18 Developer Cartridge

19 Roller Cleaner

20 Fusing Unit

21 Toner Collecting Container

OPERATION PANEL

The operation panel is used to set the Laser Printer off-line for direct operations, such as setting the menu items and executing self-tests.
Note the following when using the operation panel:
● Set the printer off-line before using the keys.
● Some keys have several functions, which are selected by the duration of time the key is pressed. Be sure to check the functions on the display.

㉒ READY lamp (green)
Remains lit when the Laser Printer is on and ready to print. Blinks while receiving data on-line, is off during warm-up, and turns off when an error occurs.

㉓ MANUAL lamp (orange)
Lights when the manual feed mode is selected.

㉔ ON LINE lamp (green)
Lights when the Laser Printer is set on-line and ready to receive data from the computer. If the LINE key is pressed during printing to set the Laser Printer off-line, this lamp blinks until the page being printed is fed out, indicating that the Laser Printer cannot be set to off-line.

㉕ DATA lamp (orange)
Lights when the print buffer contains data to print. Blinks if the Laser Printer has waited more than 5 seconds for a form feed command and a partial page remains in the printer buffer.

㉖ Display
The 16-character liquid crystal display indicates the following:
● Status messages
● Menu settings (See SETTING THE MENU ITEMS, page 25.)
● Error conditions (See PRINTER TROUBLE?, page 89.)
● Service messages (See SERVICE REQUIRED, page 77.)

㉗ LINE key
Used to alternately set the printer on-line and off-line. Also used to set the printer on-line after performing the self tests or setting the menu items. The Laser Printer can receive data from the computer when on-line (ON LINE lamp on) and cannot receive data from the computer when off-line (ON LINE lamp off).

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㉘ CONTINUE/RESET key

Used to select the following two functions:

CONTINUE: Clears most errors (see page 89).

Used for the following operations:

● To set the printer on-line from the off-line state after an error.
● To cancel printer self-tests and set the printer on-line.
● To set the printer on-line from the menu setting mode.
● To continue printing with the current paper source even when the printer requests a different paper size (or envelope type).

RESET: Resets the Laser Printer to ensure that the panel default settings (the menu settings selected by the user) are available.

Includes the following operation:

● In HP LaserJet series II emulation, temporary soft fonts and temporary macros are cleared.
● Stored page data is cleared.

㉙ **PRINT FONTS/TEST key**

Used to select the following three functions:

PRINT FONTS: Prints out available fonts.

SELF TEST #1: Prints the settings of the various menu items.

SELF TEST #2: Starts test pattern printing.

㉚ **FORM FEED key**

Prints data in the print buffer when the printer is off-line. This key is not effective when the printer is on-line.

㉛ **MENU key**

Used to select the following two functions:

PRINTING MENU: Enters the Printing Menu mode. (See SETTING THE MENU ITEMS, page 27.)

CONFIGURATION MENU: Enters the Configuration Menu mode. (See SETTING THE MENU ITEMS, page 27.)

㉜ **ENTER/RESET MENU key**

Used to select the following two functions:

ENTER: Specifies the menu values to be saved as panel default settings.

RESET MENU: Initializes all items in the Printing Menu to the factory default settings.

Also resets the following:
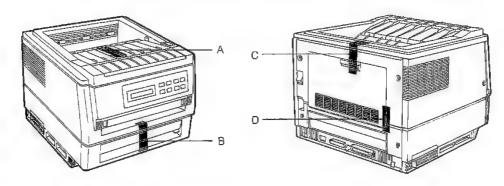
● In HP LaserJet series II emulation, temporary soft fonts and temporary macros are cleared.
● Stored page data is cleared.

㉝ △ **and** ▽ **keys**

Used to select values for the menu items. Each time the keys are pressed the menu values change.
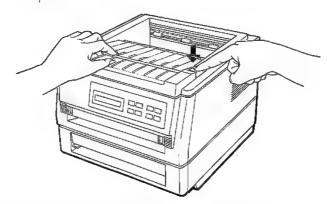
● Remove the Laser Printer from the plastic bag.
Remove securing tape (A), (B) and (C), and packing material (D).
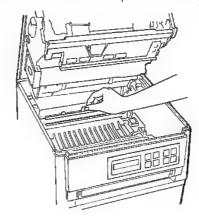
INSTALLING THE SUPPLIES

Installing the Roller Cleaner and the Toner Collecting Container
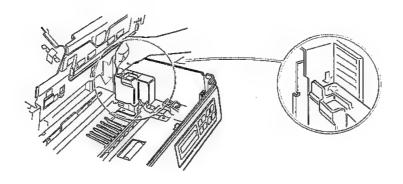
1. Hold the top of the Laser Printer and press the **upper unit release button** to open it.

2. Remove the roller cleaner from its plastic bag.
3. Install the roller cleaner on top of the fusing unit.

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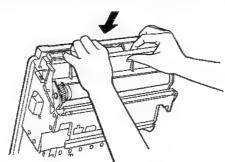
4. Firmly insert the toner collecting container to the position of the arrow.
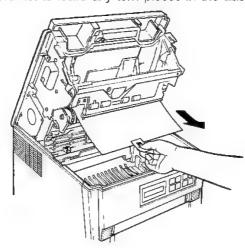
Installing the Photoconductor Cartridge

1. Remove the photoconductor cartridge from its plastic bag. BE CAREFUL NOT TO TOUCH THE PHOTOCONDUCTIVE DRUM.
2. With the photoconductive drum facing down, fully insert the photoconductor cartridge into the Laser Printer, sliding it along the guides.
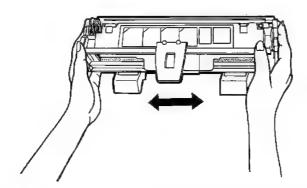
3. Hold the upper unit and pull the green tab to remove the protective sheet. Be sure not to leave any torn pieces in the Laser Printer.
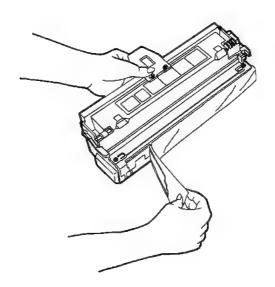
Installing the Developer Cartridge
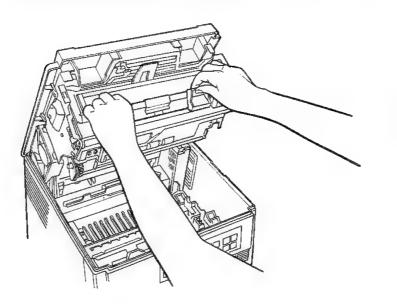
1. Remove the developer cartridge from its plastic bag, taking care not to damage it.
2. Remove the protective plastic cover.
3. Shake the developer cartridge vigorously in a horizontal direction four or five times.

4. Place the developer cartridge on a level surface, hold it in place, and remove the covering material.
- Be careful not to touch the developer roller.
- Do not remove the sealing plate on the other side of the developer cartridge.

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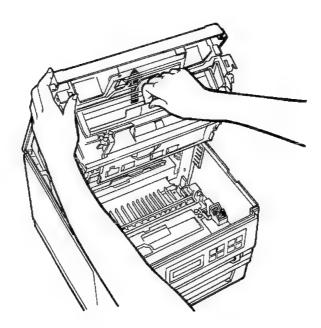
5. Press the levers on the developer cartridge with both hands and slide it into the Laser Printer along the guides.
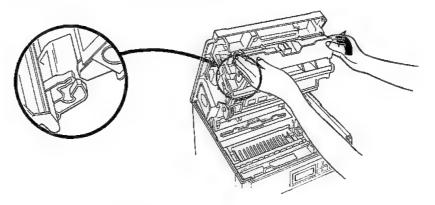
6. Remove the tape securing the sealing plate and pull out the sealing plate.
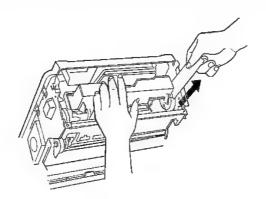
Installing the Toner Cartridge

1. Shake the toner cartridge horizontally four or five times.
2. Align the toner cartridge slots with the developer cartridge hooks, and rotate until it clicks and is securely attached.

3. Hold the toner cartridge and pull out the sealing tape from the toner cartridge.

   With the upper unit in a fully upright position, tap on the toner cartridge four or five times to release all the toner into the developer cartridge.

4. Close the Laser Printer.

CAUTION
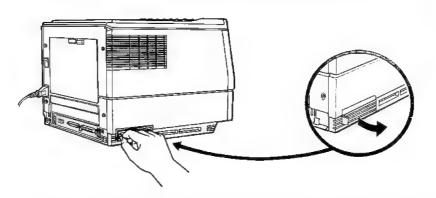
There are fuses in the photoconductor unit, the developer unit and the toner collecting container. Do not turn on the Laser Printer while changing any of the above parts, or the fuses will be blown.

These fuses have a sensing effect and reset the counters for the photocon-ductor unit, the developer unit or the toner unit.
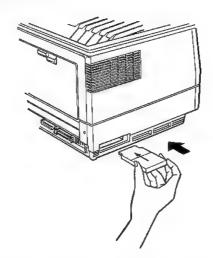
The expansion memory is available as an option (see page 94).

1. Turn off the power.
2. Remove the expansion memory cover on the bottom left-hand side of the Laser Printer by pulling the cover tab to the right and out.

3. Insert the expansion memory, with the arrow facing up, all the way into the Laser Printer.

4. Replace the expansion memory cover.
● If the cover cannot be replaced, the expansion memory may be improperly inserted (upside down).
5. Perform SELF TEST #1 to check that the expansion memory is properly installed (see page 19).
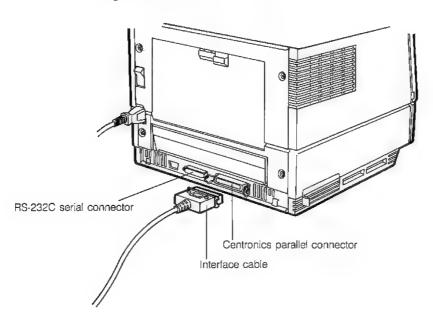
CONNECTING THE INTERFACE CABLE

The Laser Printer is equipped with both a Centronics parallel and a RS-232C serial interface. The Laser Printer has been set at the factory to use the Centronics parallel interface. To set the RS-232C serial interface, see SETTING THE MENU ITEMS, page 46.

NOTE:
A shielded, grounded cable and connector are required to comply with either FCC Class B or VDE 0871 and 0875 requirements.
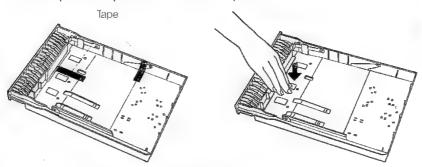
1. Turn off the power.
2. Remove the protective cover from the desired connector. (Leave the other protective cover in place to prevent accidental contact, or damage from static electricity.)
3. Plug the cable into the connector.

RS-232C serial connector

Centronics parallel connector

Interface cable
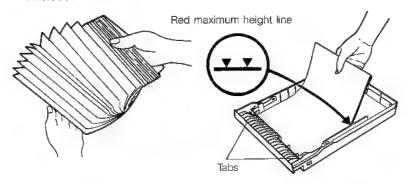
4. Fasten the bail clips for the parallel connector or secure the two screws for the serial connector.

The paper cassette feeds paper for automatic feeding and can hold about 250 sheets of standard weight paper (60 to 80 g/m² or 16 to 21 lbs. weight).
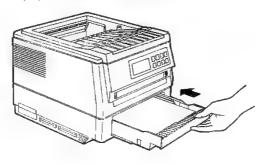
● When using the paper cassette for the first time, be sure to remove the securing tape shown below before loading the paper. (Follow the same procedure when using the optional cassettes.)

1. Push the pressure plate until it locks in position.

Tape

2. Fan up to 250 sheets of standard paper.
3. Place the paper in the cassette with the corners under the metal corner tabs. Remove some paper if the paper is tight under the metal corner tabs. Shake the paper cassette gently to straighten the paper.
● Note that the side facing down is the printing side.
● Do not load paper above the red maximum height line, or paper may misfeed.

Red maximum height line

Tabs

4. Slide the paper cassette into the Laser Printer until it locks in place.

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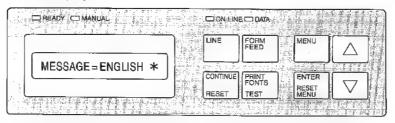
LANGUAGE SELECTION

The messages shown on the display, font printout, and SELF TEST #1 printout can be selected from five different languages: English, French, German, Italian, and Spanish. Follow the procedure below to set the desired language indication.

> **NOTE:**
> In this manual, underlined values given in display messages may vary according to your configuration or settings.

1. Press· the **LINE key** to set the printer off-line.
2. Press the **MENU key** until "SYM.SET= ROMAN-8 ✱" appears on the display.
3. Press the **MENU key** again until "MESSAGE= ENGLISH ✱" appears on the display.

4. Press the △ or ▽ **key** to select the desired language:
   ENGLISH
   FRENCH
   GERMAN
   ITALIAN
   SPANISH
5. Press the **ENTER/RESET MENU key.**
● An asterisk (✱) appears on the display.
6. Press the **MENU key** several times until the display shows "READY".
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
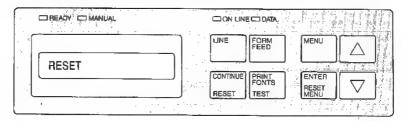
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.
8. When all the settings are completed, perform SELF-TEST #1 before printing to confirm the selected values.

NOTE:
In the following pages, all messages, font printout, and SELF-TEST # printout are shown in English.

After you have performed all the installation procedures for the Laser Printer, we recommend that the self-tests be performed to check printing. There are two self-tests: SELF TEST #1 and SELF TEST #2.
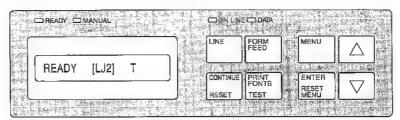
SELF TEST #1 prints the selected menu items and values. SELF TEST #2 prints an entire sheet of characters in a test pattern using the internal character set.

To perform these tests, check that the:
● supplies are installed.
● paper cassette is loaded with paper.
● Laser Printer is connected to a power outlet.
  (A computer is not required for these tests.)
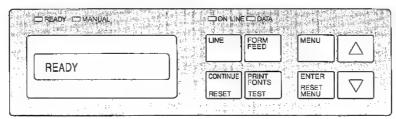
Entering the Self-Test Mode

1. Press the **power switch** to turn on the power.
● "WARMING UP" appears on the display.
● The ON LINE lamp lights, the READY lamp lights, and "READY [LJ2]T" appears on the display. In about 60 seconds, "READY" stops blinking.
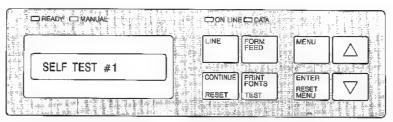
2. Press the **LINE key** to set the printer off-line.
● The ON LINE lamp turns off.
● "READY" appears on the display.

SELF-TEST #1

1. Press and hold the **PRINT FONTS/TEST key** until the display shows "SELF TEST #1".
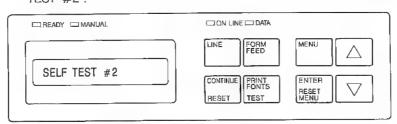
- The DATA lamp lights and printing begins.
- The printed sheet listing the menu settings (e.g. type of interface, emulation, etc.), such as shown below, is output, and the DATA lamp turns off.
- When printing is complete, "READY" appears on the display.

SAMPLE

```
             MENU SETTING LIST

                 Printing Menu

Paper Source      = Tray
Copies            = 1
Font Source       = Internal Font
Font Number       = 00
Form Length       = 64   Lines
Line Format       = 77

               Configuration Menu

Symbol Set        = ROMAN-8
Interface         = Parallel
Timing            = 1
Emulation         = HP LaserJet series II
Message           = English

                Other Information

Tray Paper Size   = A4
Current Font ID   = None
Current Typeface  = COURIER
Program ROM       = EPR1A,EPR2A
Internal Font ROM = ICG1A,ICG2A
PCU-Firmware      = PCU-I
Installed Memory  = 512  KBytes

                   Life Count

Machine           =        1 Sheets
Photoconductor    =        1 Sheets
Developer         =        1 Sheets
```

SELF-TEST #2

1. Press and hold the **PRINT FONTS/TEST key** until the display shows "SELF TEST #2".

```
☐ READY  ☐ MANUAL            ☐ ON LINE ☐ DATA

                              ┌──────┐┌──────┐ ┌──────┐ ┌───┐
                              │ LINE ││ FORM ││ MENU │ │ △ │
                              │      ││ FEED ││      │ └───┘
   ┌──────────────────┐       └──────┘└──────┘ └──────┘
   │                  │       ┌────────┐┌──────┐┌──────┐┌───┐
   │  SELF TEST #2    │       │CONTINUE││PRINT ││ENTER ││ ▽ │
   │                  │       │        ││FONTS ││RESET ││   │
   └──────────────────┘       │ RESET  ││ TEST ││MENU  │└───┘
                              └────────┘└──────┘└──────┘
```

- The DATA lamp lights and printing begins.
- The printed test pattern is output, and the DATA lamp turns off. Check that the printout is similar to the one shown below.

SAMPLE

```
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_a
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_ab
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abc
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcd
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcde
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdef
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefg
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefgh
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghi
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghij
23456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijk
3456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijkl
456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklm
56789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmn
6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmno
789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnop
89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopq
9:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqr
:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrs
;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrst
<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrstu
=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrstuv
>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrstuvw
?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrstuvwx
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrstuvwxy
ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_abcdefghijklmnopqrstuvwxyz
```

3. PRINTING

STANDARD PRINTING

After you have confirmed that the Laser Printer is printing normally through the self-tests, you are now ready to print computer files. To print computer files check that the:
- supplies are installed.
- paper cassette is loaded with paper. (Be sure the paper size matches the size of the document to be printed.)
- computer is connected through the proper interface cable.
- Laser Printer is connected to a power outlet.
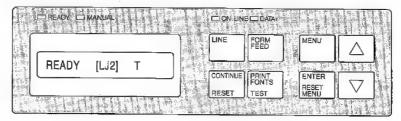
Press the **power switch** to turn on the power.
- "WARMING UP" appears on the display.
- The ON LINE lamp lights, the READY lamp lights, and "READY [LJ2]T" appears on the display. (The message indicates the emulation and the paper cassette selected; i.e. LJ2 = HP LaserJet series II, T = standard paper cassette.) In about 60 seconds, "READY" stops blinking.

NOTE:
While "READY" is blinking, the printer can receive data. Printing commences when "READY" stops blinking.

The Laser Printer can now print a file from the computer in the same manner as other printers. Note that the Laser Printer prints in page units and will not print until a page of data (terminated by a form feed command) has been received. Therefore, if several pages are sent, the last page will remain unprinted unless it ends with a form feed command.

If the last page does not end with a form feed command and the form feed command is not sent for 5 seconds, the DATA lamp blinks to indicate that there is data for the last page remaining in the print buffer. In this case:
- Press the **LINE key** to set the Laser Printer off-line.
- Press the **FORM FEED key** to print the last page.
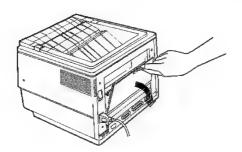
The manual feed slot allows manual feeding of paper other than standard 60 to 80 g/m^2 paper, such as heavier paper stock, transparency film, and envelopes. When using nonstandard paper, select the face up tray.
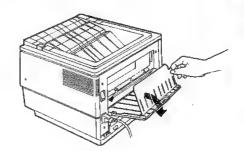
Face Up Tray

The face up tray holds up to 30 sheets of paper.
The face up tray is located on the back of the Laser Printer. When using, fold down and out as shown below.
*Note that the tray might not be able to hold legal size paper.
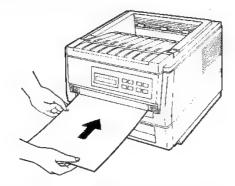
Single Sheet Manual Feed Printing
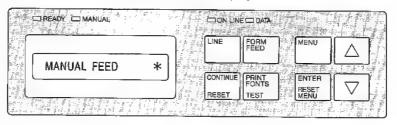
● When manual feeding multiple sheets of paper, be sure the paper cassette is installed. If not, use the Continuous Manual Feed mode explained on the following page.

1. Insert a single sheet of paper or envelope in the manual feed slot, aligning its edge with the left side of the slot.
● Insert invoice-size paper and envelopes lengthwise.
● The paper will be drawn in automatically.
● Insert only one sheet at a time.
● Note that the side facing up is the printing side.
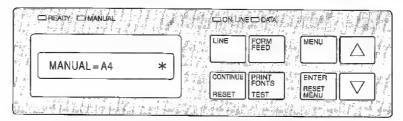
2. Send data from the computer and print.

Continuous Manual Feed Printing

● When manual feeding envelopes, use the face up tray.

1. If the Laser Printer is on-line, press the **LINE key** to set the printer off-line.
● The ON LINE lamp turns off and "READY" appears on the display.
● Press the **MENU key** to select the Printing Menu. "TRAY=A4" (i.e. A4 size cassette installed) appears on the display.
2. Press the △ or ▽ **key** several times until "MANUAL FEED" appears on the display.
3. Press the **ENTER/RESET MENU key**.
● The MANUAL lamp lights.
● An asterisk (✱) appears on the display.

4. Press the **MENU key** until "MANUAL=A4✱" appears on the display.

5. Press the △ or ▽ **key** to select the desired paper size.

The paper size is indicated as:
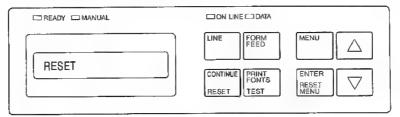
LETTER.....	Letter	AFSP	Government letter
LEGAL......	Legal		(8″ × 10.5″)
EXECUT ...	Executive	COM-10........	Commercial 10 (Business)
INVOIC	Invoice	MONARC	Monarch
A4.............	A4	DL..............	International DL
B5.............	B5	C5	International C5

6. Press the **ENTER/RESET MENU key**.
● An asterisk (✳) appears on the display.
7. Press the **MENU key** several times until "READY" appears on the display.
8. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display.
● "READY [LJ2]MF" appears on the display, and the ON LINE lamp lights.

9. Send data from the computer to the Laser Printer.
● In the HP LaserJet series II emulation mode, the paper size or the envelope size is specified by the host computer. When the paper size or the envelope size setting sent from the host computer differs from the current paper size or envelope size setting, "FEED=B5" appears on the display. This indicates that B5 size paper is required for manual feed.
10. Insert a single sheet of paper or envelope (lengthwise) into the manual feed slot, aligning its edge with the left side of the slot.
● The Laser Printer will detect that a sheet or envelope has been inserted and will automatically print the page.
11. When the printed page is output, insert the next sheet of paper.
● If the next sheet is inserted before the previous page is output, paper misfeed or an error may occur.
● In the HP LaserJet series II emulation, the same display shown in step 9 appears, to prompt the manual feeding of the next sheet.
● If an error occurs, clear the error by following the instructions on page 89. Then, press the **LINE key** to set the printer on-line.
12. When finished with manual feeding, press the **LINE key** to set the printer off-line.
● The ON LINE lamp turns off and "READY" appears on the display.
13. Press the **MENU key** to select the Printing Menu. "MANUAL FEED" appears on the display.
14. Press the △ or ▽ **key** to select the desired paper source and press the **ENTER/RESET MENU key**.
15. Press the **MENU key** several times until "READY" appears on the display.
16. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display.
● "READY [LJ2]T" appears on the display and the ON LINE lamp lights.

4. SETTING THE MENU ITEMS

Laser Printer menu items such as paper orientation, interface selection, emulation mode, and font can be set using the operation panel keys.

These have been pre-selected at the factory to the initial settings given below, which will remain in effect until changed.

When the settings have been changed to suit your printing needs, they can be saved as Panel Default Settings, which are used whenever you turn on the printer or reset it.

INITIAL SETTINGS

Common Functions

Orientation	Portrait
Page size	Normal
Manual feed paper size	A4
Envelope size	COM-10
Interface	Parallel
Timing	1
Emulation mode	HP LaserJet series II
Automatic line feed	OFF
Paper source	Standard cassette
National character	U.S.A.
IBM national character	GLOBAL
Automatic carriage return	OFF
Zero character	0
Language	English
Auto tray change	NO

RS-232C Serial Interface Functions

Baud rate	9600
Data bit	8
Parity	NON
Robust XON	ON
DTR polarity	Hi

HP LaserJet Series II Emulation Functions

Font source	Resident
Font number	0
Form length	64 (in A4 size)
Symbol set	Roman-8
Line format	77

Epson FX-80 Emulation Functions

Font number	0
FIX auto line feed	OFF
FIXED select	ON

IBM Proprinter Emulation Functions

Font number	SET 1 (Set 2: European countries except U.K.)

IBM Graphics Printer Emulation Functions

Font Number	SET 1 (Set 2: European countries except U.K.)

Diablo 630 Emulation Functions

Font source	Resident
Font number	0
Character pitch	10
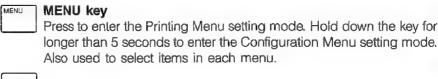
MENU SETTING MODES

There are two kinds of menu: the Printing Menu and the Configuration Menu. The Printing Menu contains items that determine the final appearance of the printed page such as the font and lines per page.
The Configuration Menu contains items that determine the communication method between the computer and the Laser Printer.
The items in each menu differ depending on the emulation mode. Refer to the reference guide for each emulation mode.

The keys below are used to select menu items and values.

MENU key
Press to enter the Printing Menu setting mode. Hold down the key for longer than 5 seconds to enter the Configuration Menu setting mode. Also used to select items in each menu.

△ and ▽ keys
Press to select the values for the items to set.
The menu values change with each press of a key.

ENTER/RESET MENU key
Press to select a value for a menu item. When the value is selected, an asterisk (✳) appears on the display.

CONTINUE/RESET key
Press until "RESET" appears on the display. The selected values are saved and become effective as panel default settings.
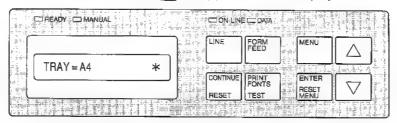
> **NOTE:**
> In this manual, underlined values given in display messages may vary according to your configuration or settings.
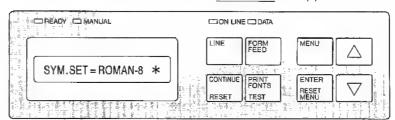
BASIC SETTING PROCEDURE

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** to select either the Printing Menu or Configuration Menu.
   Printing Menu: "TRAY=A4✱" appears on the display.

Configuration Menu: "SYM.SET=ROMAN-8✱" appears on the display.

Example:
HP LaserJet
series II
emulation
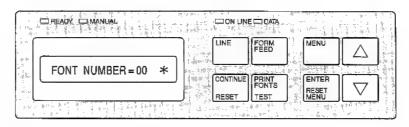
3. Press the **MENU key** again until the desired menu item appears on the display.

Example:
Selecting a
font number
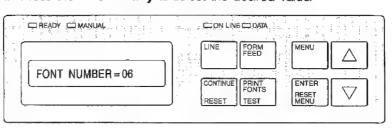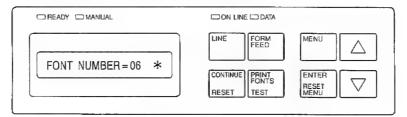
4. Press the △ or ▽ **key** to select the desired value.
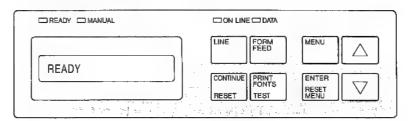
Example:
Font number
06 (Courier
Bold)
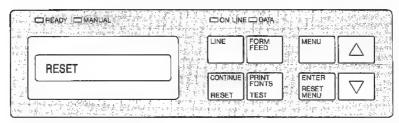
5. Press the **ENTER/RESET MENU key**.
● An asterisk (✳) appears on the display.

```
┌─────────────────────────────────────────────────────────────────┐
│  ☐ READY ☐ MANUAL              ☐ ON LINE ☐ DATA                  │
│  ┌──────────────────────────┐  ┌────┐┌──────┐  ┌──────┐ ┌────┐  │
│  │                          │  │LINE││FORM  │  │MENU  │ │ △  │  │
│  │                          │  │    ││FEED  │  │      │ │    │  │
│  │  FONT NUMBER = 06   ✳    │  └────┘└──────┘  └──────┘ └────┘  │
│  │                          │  ┌────────┐┌──────┐ ┌──────┐┌────┐ │
│  │                          │  │CONTINUE││PRINT │ │ENTER ││ ▽  │ │
│  └──────────────────────────┘  │        ││FONTS │ │RESET │└────┘ │
│                                 │RESET   ││TEST  │ │MENU  │       │
│                                 └────────┘└──────┘ └──────┘       │
└─────────────────────────────────────────────────────────────────┘
```

6. Press the **MENU key** until the display shows "READY".

```
┌─────────────────────────────────────────────────────────────────┐
│  ☐ READY ☐ MANUAL              ☐ ON LINE ☐ DATA                  │
│  ┌──────────────────────────┐  ┌────┐┌──────┐  ┌──────┐ ┌────┐  │
│  │                          │  │LINE││FORM  │  │MENU  │ │ △  │  │
│  │                          │  │    ││FEED  │  │      │ │    │  │
│  │  READY                   │  └────┘└──────┘  └──────┘ └────┘  │
│  │                          │  ┌────────┐┌──────┐ ┌──────┐┌────┐ │
│  │                          │  │CONTINUE││PRINT │ │ENTER ││ ▽  │ │
│  └──────────────────────────┘  │        ││FONTS │ │RESET │└────┘ │
│                                 │RESET   ││TEST  │ │MENU  │       │
│                                 └────────┘└──────┘ └──────┘       │
└─────────────────────────────────────────────────────────────────┘
```

7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.
● The selected value becomes available as a Panel Default Setting.

```
┌─────────────────────────────────────────────────────────────────┐
│  ☐ READY ☐ MANUAL              ☐ ON LINE ☐ DATA                  │
│  ┌──────────────────────────┐  ┌────┐┌──────┐  ┌──────┐ ┌────┐  │
│  │                          │  │LINE││FORM  │  │MENU  │ │ △  │  │
│  │                          │  │    ││FEED  │  │      │ │    │  │
│  │  RESET                   │  └────┘└──────┘  └──────┘ └────┘  │
│  │                          │  ┌────────┐┌──────┐ ┌──────┐┌────┐ │
│  │                          │  │CONTINUE││PRINT │ │ENTER ││ ▽  │ │
│  └──────────────────────────┘  │        ││FONTS │ │RESET │└────┘ │
│                                 │RESET   ││TEST  │ │MENU  │       │
│                                 └────────┘└──────┘ └──────┘       │
└─────────────────────────────────────────────────────────────────┘
```

8. When all the settings are completed, perform SELF-TEST #1 before printing to confirm the selected values.

HP LASERJET SERIES II EMULATION

Printing Menu Items

The Printing Menu for the HP LaserJet series II emulation includes the following items:

Paper source	Select the paper source.
Number of copies	Sets the number of copies for the multi-print feature.
Manual feed paper size	Sets the paper size in the manual feed mode. This item appears only when the manual feed mode is set.
Envelope size	Sets the envelope size. This item appears only when the optional envelope feeder is installed.
Auto tray change	Sets the AUTO TRAY CHANGE feature; automatically selects the alternate paper source if paper runs out or if another size of paper is required. This can only operate if the second cassette unit is installed and contains the right size of paper.
Font source	Sets the font source. A and B can be selected only when an optional font card is inserted in either font card slot. S (soft font) appears only when a soft font is available.
Font number	Sets the font number. See page 38 for font numbers.
Form length (lines per page)	Sets the form length.
Line format	Sets the number of characters in a line for A4 size paper (HP emulation only).

Printing Menu Reference Guide
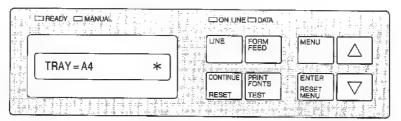
Item	Display	Selectable values
Paper source	TRAY=A4	TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED*
Number of copies	COPIES=01	01, 02, ...99
Manual feed paper size	MANUAL=A4	LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5
Envelope size	ENVELOPE=COM-10	COM-10, MONARC, DL, C5
Auto tray change	AUTO TRAY CHG=N	N (NO), Y (YES)
Font source	FONT SOURCE=I	I (Internal) A (Slot A) B (Slot B) S (Soft font)
Font number	FONT NUMBER=00	00, 01, ... 99
Form length	FORM LENGTH=060	05, 06, ...128
Line format	LINE FORMAT=77	77, 80

*Option

SETTING THE MENU ITEMS

30

Paper Source

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** once so that "TRAY=<u>A4</u>✳" appears on the display.
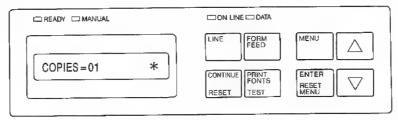
3. Press the △ or ▽ **key** to select the desired paper source.
4. Press the **ENTER/RESET MENU key.**
● An asterisk (✳) appears on the display.
5. Press the **MENU key** until the display shows "READY".
6. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.
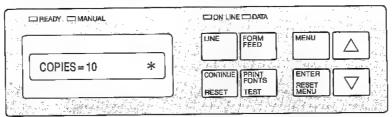
The number of copies is a power-on default, and will return to "COPIES=01" when the power is turned on.

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** until "COPIES=01 ✱" appears on the display.

```
┌─────────────────────────────────────────────────────────────────┐
│  □ READY  □ MANUAL              □ ON LINE □ DATA                  │
│  ┌──────────────────────┐   ┌─────┐┌──────┐  ┌──────┐  ┌───┐     │
│  │                      │   │LINE ││FORM  │  │MENU  │  │ △ │     │
│  │                      │   │     ││FEED  │  │      │  │   │     │
│  │  COPIES = 01      ✱  │   └─────┘└──────┘  └──────┘  └───┘     │
│  │                      │   ┌────────┐┌──────┐┌──────┐┌───┐      │
│  └──────────────────────┘   │CONTINUE││PRINT ││ENTER ││ ▽ │      │
│                             │        ││FONTS ││RESET ││   │      │
│                             │RESET   ││TEST  ││MENU  │└───┘      │
│                             └────────┘└──────┘└──────┘           │
└─────────────────────────────────────────────────────────────────┘
```
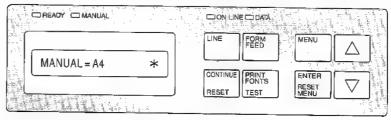
3. Press the △ or ▽ **key** to select the desired number of copies from 1 to 99.
4. Press the **ENTER/RESET MENU key.**
● An asterisk (✱) appears on the display.

```
┌─────────────────────────────────────────────────────────────────┐
│  □ READY  □ MANUAL              □ ON LINE □ DATA                  │
│  ┌──────────────────────┐   ┌─────┐┌──────┐  ┌──────┐  ┌───┐     │
│  │                      │   │LINE ││FORM  │  │MENU  │  │ △ │     │
│  │                      │   │     ││FEED  │  │      │  │   │     │
│  │  COPIES = 10      ✱  │   └─────┘└──────┘  └──────┘  └───┘     │
│  │                      │   ┌────────┐┌──────┐┌──────┐┌───┐      │
│  └──────────────────────┘   │CONTINUE││PRINT ││ENTER ││ ▽ │      │
│                             │        ││FONTS ││RESET ││   │      │
│                             │RESET   ││TEST  ││MENU  │└───┘      │
│                             └────────┘└──────┘└──────┘           │
└─────────────────────────────────────────────────────────────────┘
```

5. Press the **MENU key** until the display shows "READY".
6. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

SETTING THE MENU ITEMS

32

Manual Feed Paper Size

1. Set the Laser Printer to the manual feed mode (see page 22).
2. Press the **LINE key** to set the Laser Printer off-line.
3. Press the **MENU key** once so that "TRAY=A4 *" appears on the display.
4. Press the **MENU key** again until "MANUAL=A4 *" appears on the display.

5. Press the △ or ▽ **key** to select the desired paper size:
   LETTER... Letter   (AFSP .... Goverment letter)
   LEGAL.... Legal   COM-10 ..... Commercial 10 (Business)
   EXECUT.. Executive   MONARC .. Monarch
   INVOIC.... Invoice   DL .... International DL
   A4 .... A4   C5 .... International C5
   B5 .... B5
6. Press the **ENTER/RESET MENU key**.
● An asterisk (*) appears on the display.

7. Press the **MENU key** several times until the display shows "READY".
8. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]MF" appears on the display, and the ON LINE lamp lights.

This setting is made when the optional envelope feeder is installed.

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** once so that "TRAY=A4*" appears on the display.
3. Press the **MENU key** again until "ENVELOPE=COM-10*" appears on the display.

```
┌─────────────────────────────────────────────────────────┐
│  □ READY □ MANUAL            □ ON LINE □ DATA             │
│                                                          │
│                            ┌──────┐┌──────┐ ┌──────┐ ┌──┐ │
│  ┌───────────────────────┐ │ LINE ││ FORM ││ MENU │ │ △│ │
│  │                       │ │      ││ FEED ││      │ │  │ │
│  │  ENVELOPE = COM-10 *  │ └──────┘└──────┘ └──────┘ └──┘ │
│  │                       │ ┌────────┐┌──────┐┌──────┐┌──┐ │
│  └───────────────────────┘ │CONTINUE││PRINT ││ENTER ││ ▽│ │
│                            │        ││FONTS ││RESET ││  │ │
│                            │ RESET  ││ TEST ││MENU  │└──┘ │
│                            └────────┘└──────┘└──────┘     │
└─────────────────────────────────────────────────────────┘
```

4. Press the △ or ▽ **key** to select the desired envelope size:
   COM-10....... Commercial 10 (Business)
   MONARC... Monarch
   DL.............. International DL
   C5 .... International C5
5. Press the **ENTER/RESET MENU key**.
● An asterisk (*) appears on the display.
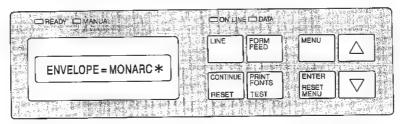
```
┌─────────────────────────────────────────────────────────┐
│  □ READY □ MANUAL            □ ON LINE □ DATA             │
│                                                          │
│                            ┌──────┐┌──────┐ ┌──────┐ ┌──┐ │
│  ┌───────────────────────┐ │ LINE ││ FORM ││ MENU │ │ △│ │
│  │                       │ │      ││ FEED ││      │ │  │ │
│  │  ENVELOPE = MONARC *  │ └──────┘└──────┘ └──────┘ └──┘ │
│  │                       │ ┌────────┐┌──────┐┌──────┐┌──┐ │
│  └───────────────────────┘ │CONTINUE││PRINT ││ENTER ││ ▽│ │
│                            │        ││FONTS ││RESET ││  │ │
│                            │ RESET  ││ TEST ││MENU  │└──┘ │
│                            └────────┘└──────┘└──────┘     │
└─────────────────────────────────────────────────────────┘
```

6. Press the **MENU key** until the display shows "READY".
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]EV" appears on the display, and the ON LINE lamp lights.

NOTE
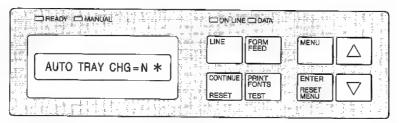
In the HP LaserJet series II emulation mode, the envelope size is specified by the host computer. When the envelope size setting sent from the host computer differs from the current envelope size setting, "ENVELOPE=MONARC" (for example: change envelope to Monarch size) appears on the display.
● Feed the envelope of the size requested.
● To override this request, press the **CONTINUE/RESET key**. An envelope size different from the one requested can be fed. However, it may be improperly formatted.

Auto Tray Change

This setting is made when the optional second cassette unit or the envelope feeder is installed.

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** once so that "TRAY=A4✽" appears on the display.
3. Press the **MENU key** again until "AUTO TRAY CHG=N✽" appears on the display.

4. Press the △ or ▽ **key** to select the desired mode: Y (YES) or N (NO).
5. Press the **ENTER/RESET MENU key**.
● An asterisk (✽) appears on the display.

6. Press the **MENU key** until the display shows "READY".
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

1. Press the **LINE key** to set the Laser Printer off-line.
2. If using an optional font card, insert it in the font card slot. See page 67.
3. Press the **MENU key** once so that "TRAY=A4 ✻" appears on the display.
4. Press the **MENU key** again until "FONT SOURCE=I ✻" appears on the display.

```
┌─────────────────────────────────────────────────────────────┐
│ ☐ READY  ☐ MANUAL            ☐ ON LINE ☐ DATA                │
│                            ┌──────┐┌──────┐  ┌──────┐         │
│  ┌───────────────────────┐ │ LINE ││ FORM ││  │ MENU │ ┌───┐ │
│  │                       │ │      ││ FEED ││  │      │ │ △ │ │
│  │  FONT SOURCE = I   ✻  │ └──────┘└──────┘  └──────┘ └───┘ │
│  │                       │ ┌────────┐┌──────┐ ┌──────┐      │
│  └───────────────────────┘ │CONTINUE││PRINT ││ │ENTER │┌───┐│
│                            │        ││FONTS ││ │RESET ││ ▽ ││
│                            │ RESET  ││ TEST ││ │MENU  │└───┘│
│                            └────────┘└──────┘ └──────┘      │
└─────────────────────────────────────────────────────────────┘
```
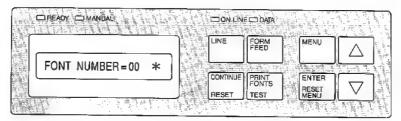
5. Press the △ or ▽ **key** to select the desired font source: I (Internal), A (slot A), B (slot B), S (soft font).
● "A" and "B" appear only when an optional font card is inserted in either font card slot.
   "S" appears only when a permanent soft font is available.
6. Press the **ENTER/RESET MENU key**.
● An asterisk (✻) appears on the display.

```
┌─────────────────────────────────────────────────────────────┐
│ ☐ READY  ☐ MANUAL            ☐ ON LINE ☐ DATA                │
│                            ┌──────┐┌──────┐  ┌──────┐         │
│  ┌───────────────────────┐ │ LINE ││ FORM ││  │ MENU │ ┌───┐ │
│  │                       │ │      ││ FEED ││  │      │ │ △ │ │
│  │  FONT SOURCE = A   ✻  │ └──────┘└──────┘  └──────┘ └───┘ │
│  │                       │ ┌────────┐┌──────┐ ┌──────┐      │
│  └───────────────────────┘ │CONTINUE││PRINT ││ │ENTER │┌───┐│
│                            │        ││FONTS ││ │RESET ││ ▽ ││
│                            │ RESET  ││ TEST ││ │MENU  │└───┘│
│                            └────────┘└──────┘ └──────┘      │
└─────────────────────────────────────────────────────────────┘
```

7. Press the **MENU key** until the display shows "READY".
8. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

SETTING THE MENU ITEMS

Font Number

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** once so that "TRAY=A4✳" appears on the display.
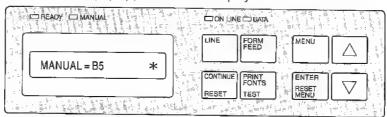3. Press the **MENU key** again until "FONT NUMBER=00✳" appears on the display.

4. Press the △ or ▽ **key** to select the desired font number (see font list, pages 81 to 86 or refer to the font printout sample).
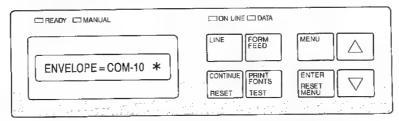5. Press the **ENTER/RESET MENU key**.
● An asterisk (✳) appears on the display.
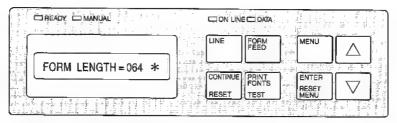
6. Press the **MENU key** until the display shows "READY".
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

HP LaserJet Series II Internal Font Number List
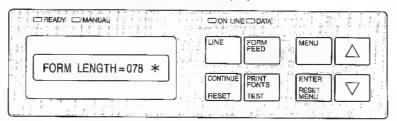
FONT NUMBER	TYPEFACE	POINT	PITCH	SYMBOL SET	PORT/LAND
00	Courier	12	10	ROMAN-8	PORT
01	Courier	12	10	IBM-US	PORT
02	Courier	12	10	IBM-D/N	PORT
03	Courier	12	10	ECMA-94	PORT
04	Courier Bold	12	10	ROMAN-8	PORT
05	Courier Bold	12	10	IBM-US	PORT
06	Courier Bold	12	10	IBM-D/N	PORT
07	Courier Bold	12	10	ECMA-94	PORT
08	Line Printer	8.5	16.7	ROMAN-8	PORT
09	Line Printer	8.5	16.7	IBM-US	PORT
10	Line Printer	8.5	16.7	IBM-D/N	PORT
11	Line Printer	8.5	16.7	ECMA-94	PORT
12	Courier	12	10	ROMAN-8	LAND
13	Courier	12	10	IBM-US	LAND
14	Courier	12	10	IBM-D/N	LAND
15	Courier	12	10	ECMA-94	LAND
16	Courier Bold	12	10	ROMAN-8	LAND
17	Courier Bold	12	10	IBM-US	LAND
18	Courier Bold	12	10	IBM-D/N	LAND
19	Courier Bold	12	10	ECMA-94	LAND
20	Line Printer	8.5	16.7	ROMAN-8	LAND
21	Line Printer	8.5	16.7	IBM-US	LAND
22	Line Printer	8.5	16.7	IBM-D/N	LAND
23	Line Printer	8.5	16.7	ECMA-94	LAND

Form Length

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** once so that "TRAY=A4✳" appears on the display.
3. Press the **MENU key** again until "FORM LENGTH=064✳" appears on the display.

FORM LENGTH = 064 ✳

4. Press the △ or ▽ **key** to select the desired lines per page from 5 to 128.
5. Press the **ENTER/RESET MENU key**.
● An asterisk (✳) appears on the display.

FORM LENGTH = 078 ✳

6. Press the **MENU key** once so that the display shows "READY".
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights up.
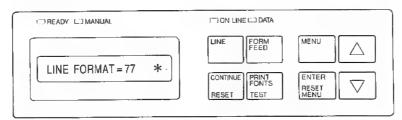
NOTE:
In the HP LaserJet series II emulation mode, the paper size is specified by the host computer. When the paper size setting sent from the host computer differs from the current paper size, "CHG. TRAY=B5" (for example: change paper to B5 size) appears on the display.
● Change the paper cassette to the size requested.
● To override this request, press the **CONTINUE/RESET key**.
  A paper size different from the one requested can be fed. However, the page may be improperly formatted.
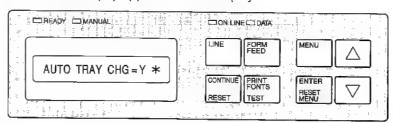
1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **MENU key** once so that "TRAY=A4 *" appears on the display.
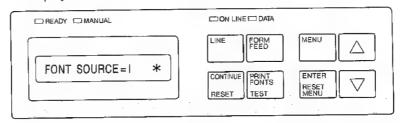3. Press the **MENU key** again until "LINE FORMAT= 77 *" appears on the display.

4. Press the △ or ▽ **key** to select the desired line format, 77 or 80.
5. Press the **ENTER/RESET MENU key**.
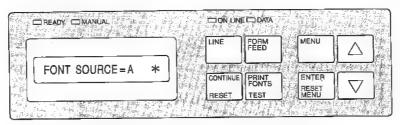● An asterisk (*) appears on the display.
6. Press the **MENU key** until the display shows "READY".
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

| WARNING |

If the line format is set to 80, the original HP line format 77 chr./line will not be supported.

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Configuration Menu Items

The Configuration Menu for the HP LaserJet series II emulation includes the following items:

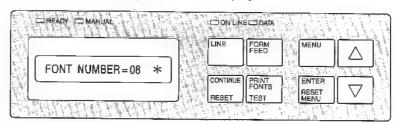**Symbol Set** A symbol set is a sub-grouping of the characters available in a font.

Interface Centronics parallel and RS-232C serial interfaces are available.
The printer is preset at the factory for parallel communication.

Timing With the Centronics parallel interface, the timing for receiving the acknowledge signal differs depending on the computer.
Thus, the timing for the acknowledge signal must be adjusted.
This item is used to select the timing value. The default value is TIMING 1. See page 99 for more details. (For parallel interface only.)

Baud rate The baud rate is the data transfer rate between the computer and the printer. This rate can be set from between 300 and 19,200 baud. (For serial interface only.)

Data bit The number of data bit can be changed. (For serial interface only.)

Parity The parity status can be set. (For serial interface only.)

Robust XON In the XON/XOFF protocol, if no data is received within approximately one second of the transmission of an XON, the printer may be configured so that it sends additional XON's at one second intervals until data is received.
This item is used to select whether additional XON's should be transmitted.
The factory setting is ROBUST-XON set to ON. (For serial interface only.)

DTR polarity The configuration of DTR polarity determines whether pin 20 on the serial interface connector is high or low when the printer is ready. If DTR polarity is high, pin 20 is high when the printer is ready. (For serial interface only.)

Emulation This item is used to select the emulation mode.

Language The messages on the display, font printout and SELF-TEST #1 printout can be selected from five different languages (English, French, German, Italian, Spanish).
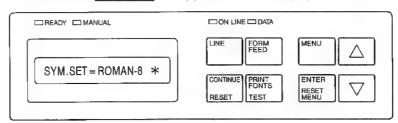
Configuration Menu Reference Guide

Item	Display	Selectable values
Symbol set	SYM. SET=ROMAN-8	See table on next page.
Interface	I/F=PARALLEL	SERIAL, PARALLEL
Timing	TIMING=1	1, 2, 3
Baud rate	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit	DATA BIT=8	8, 7
Parity	PARITY=NON	NON, EVN, ODD
Robust XON	ROBUST XON=ON	ON, OFF
DTR polarity	DTR POLARITY=HI	HI (High), LO (Low)
Emulation	EMULATION=HPLJ2	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX
Language	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH
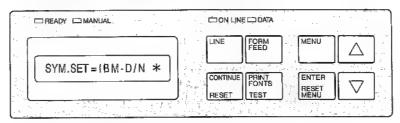
Font Printout Symbol Set #	Display	Symbol Set
8U	ROMAN-8	
0N	ECMA-94	ISO 100 Latin 1
10U	IBM-US	PC-8
11U	IBM-D/N	PC-8 Denmark/Norway
2U	ISO-2	ISO IRV
1E	ISO-4	ISO United Kingdom
0U	ISO-6	ANSI ASCII (USASCII)
3S	ISO-10	ISO Swedish
0S	ISO-11	ISO Swedish: names
0K	ISO-14	JIS ASCII
0I	ISO-15	ISO Italian
4S	ISO-16	ISO Portuguese
2S	ISO-17	ISO Spanish
1G	ISO-21	ISO German
0F	ISO-25	ISO French
2K	ISO-57	ISO Chinese
0D	ISO-60	ISO Norwegian v1
1D	ISO-61	ISO Norwegian v2
1F	ISO-69	ISO French
5S	ISO-84	ISO Portuguese: IBM
6S	ISO-85	ISO Spanish: IBM
0G	GERMAN	HP German
1S	SPANISH	HP Spanish

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press and hold the **MENU key** for longer than 5 seconds until "SYM.SET=ROMAN-8✶" appears on the display.

```
┌─────────────────────────────────────────────────────────┐
│  ☐READY ☐MANUAL            ☐ON LINE ☐DATA                 │
│                        ┌──────┐┌──────┐  ┌──────┐┌──────┐ │
│  ┌──────────────────┐  │LINE  ││FORM  │  │MENU  ││  △   │ │
│  │                  │  │      ││FEED  │  │      ││      │ │
│  │ SYM.SET = ROMAN-8 ✶│  └──────┘└──────┘  └──────┘└──────┘ │
│  │                  │  ┌──────┐┌──────┐  ┌──────┐┌──────┐ │
│  └──────────────────┘  │CONTINUE││PRINT ││ENTER ││      │ │
│                        │      ││FONTS ││RESET ││  ▽   │ │
│                        │RESET ││TEST  ││MENU  ││      │ │
│                        └──────┘└──────┘  └──────┘└──────┘ │
└─────────────────────────────────────────────────────────┘
```
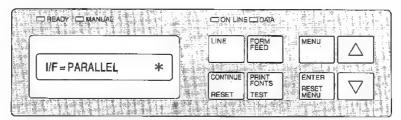
3. Press the △ or ▽ **key** to select the desired symbol set.
4. Press the **ENTER/RESET MENU key**.
● An asterisk (✶) appears on the display.

```
┌─────────────────────────────────────────────────────────┐
│  ☐READY ☐MANUAL            ☐ON LINE ☐DATA                 │
│                        ┌──────┐┌──────┐  ┌──────┐┌──────┐ │
│  ┌──────────────────┐  │LINE  ││FORM  │  │MENU  ││  △   │ │
│  │                  │  │      ││FEED  │  │      ││      │ │
│  │ SYM.SET = IBM-D/N ✶│  └──────┘└──────┘  └──────┘└──────┘ │
│  │                  │  ┌──────┐┌──────┐  ┌──────┐┌──────┐ │
│  └──────────────────┘  │CONTINUE││PRINT ││ENTER ││      │ │
│                        │      ││FONTS ││RESET ││  ▽   │ │
│                        │RESET ││TEST  ││MENU  ││      │ │
│                        └──────┘└──────┘  └──────┘└──────┘ │
└─────────────────────────────────────────────────────────┘
```

5. Press the **MENU key** until the display shows "READY".
6. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

SETTING THE MENU ITEMS
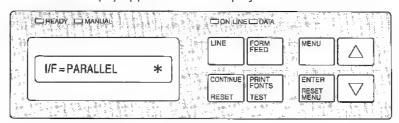
1. Press the **LINE key** to set the Laser Printer off-line.
2. Press and hold the **MENU key** until "SYM.SET=ROMAN-8✳" appears on the display.
3. Press the **MENU key** again until "I/F=PARALLEL✳" appears on the display.
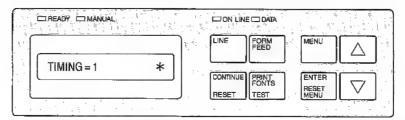
4. Press the △ or ▽ **key** to select the desired interface mode: SERIAL or PARALLEL.
● The Configuration Menu items differ depending on the interface mode. Follow the respective procedure below.

(PARALLEL interface)
5. Press the **ENTER/RESET MENU key**.
● An asterisk (✳) appears on the display.
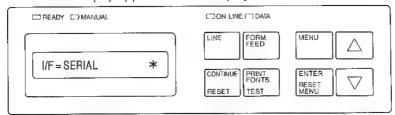
6. Press the **MENU key** once so that the display shows "TIMING=1✳."

7. Press the △ or ▽ **key** to select 1, 2 or 3 and press the **ENTER/RESET MENU key**.
● See page 99 for details on signal timing.
● An asterisk (✳) appears on the display.
8. Press the **MENU key** until the display shows "READY".
9. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

SETTING THE MENU ITEMS

(SERIAL interface)

5. Press the **ENTER/RESET MENU key**.
● An asterisk (✱) appears on the display.

```
┌─────────────────────────────────────────────────────────────┐
│  ▭ READY  ▭ MANUAL        ▭ ON LINE ▭ DATA                    │
│  ┌──────────────────────────┐   ┌──────┐┌──────┐  ┌──────┐ ┌───┐ │
│  │                          │   │ LINE ││ FORM ││  │ MENU │ │ △ │ │
│  │                          │   │      ││ FEED ││  │      │ └───┘ │
│  │  I/F = SERIAL      ✱     │   └──────┘└──────┘  └──────┘       │
│  │                          │   ┌────────┐┌──────┐ ┌──────┐ ┌───┐ │
│  │                          │   │CONTINUE││PRINT ││ │ENTER │ │ ▽ │ │
│  └──────────────────────────┘   │        ││FONTS ││ │RESET │ └───┘ │
│                                 │ RESET  ││ TEST ││ │MENU  │       │
│                                 └────────┘└──────┘ └──────┘       │
└─────────────────────────────────────────────────────────────┘
```
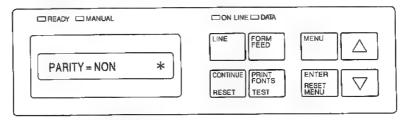
6. Press the **MENU key** once to display "BAUD RATE=9600✱".
7. Press the △ or ▽ **key** to select the desired setting and press the **ENTER/RESET MENU key**.
● An asterisk (✱) appears on the display.

```
┌─────────────────────────────────────────────────────────────┐
│  ▭ READY  ▭ MANUAL        ▭ ON LINE ▭ DATA                    │
│  ┌──────────────────────────┐   ┌──────┐┌──────┐  ┌──────┐ ┌───┐ │
│  │                          │   │ LINE ││ FORM ││  │ MENU │ │ △ │ │
│  │                          │   │      ││ FEED ││  │      │ └───┘ │
│  │  BAUD RATE = 9600    ✱   │   └──────┘└──────┘  └──────┘       │
│  │                          │   ┌────────┐┌──────┐ ┌──────┐ ┌───┐ │
│  │                          │   │CONTINUE││PRINT ││ │ENTER │ │ ▽ │ │
│  └──────────────────────────┘   │        ││FONTS ││ │RESET │ └───┘ │
│                                 │ RESET  ││ TEST ││ │MENU  │       │
│                                 └────────┘└──────┘ └──────┘       │
└─────────────────────────────────────────────────────────────┘
```

8. Press the **MENU key** once to display "DATA BIT=8✱".
9. Press the △ or ▽ **key** to select 8 or 7 and press the **ENTER/RESET MENU key**.
● An asterisk (✱) appears on the display.

```
┌─────────────────────────────────────────────────────────────┐
│  ▭ READY  ▭ MANUAL        ▭ ON LINE ▭ DATA                    │
│  ┌──────────────────────────┐   ┌──────┐┌──────┐  ┌──────┐ ┌───┐ │
│  │                          │   │ LINE ││ FORM ││  │ MENU │ │ △ │ │
│  │                          │   │      ││ FEED ││  │      │ └───┘ │
│  │  DATA BIT = 8       ✱    │   └──────┘└──────┘  └──────┘       │
│  │                          │   ┌────────┐┌──────┐ ┌──────┐ ┌───┐ │
│  │                          │   │CONTINUE││PRINT ││ │ENTER │ │ ▽ │ │
│  └──────────────────────────┘   │        ││FONTS ││ │RESET │ └───┘ │
│                                 │ RESET  ││ TEST ││ │MENU  │       │
│                                 └────────┘└──────┘ └──────┘       │
└─────────────────────────────────────────────────────────────┘
```
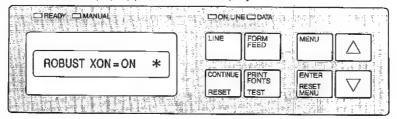
10. Press the **MENU key** once to display "PARITY=NON✱".
11. Press the △ or ▽ **key** to select NON, EVN or ODD and press the **ENTER/RESET MENU key**.
● An asterisk (✱) appears on the display.

```
┌─────────────────────────────────────────────────────────────┐
│  ▭ READY  ▭ MANUAL        ▭ ON LINE ▭ DATA                    │
│  ┌──────────────────────────┐   ┌──────┐┌──────┐  ┌──────┐ ┌───┐ │
│  │                          │   │ LINE ││ FORM ││  │ MENU │ │ △ │ │
│  │                          │   │      ││ FEED ││  │      │ └───┘ │
│  │  PARITY = NON       ✱    │   └──────┘└──────┘  └──────┘       │
│  │                          │   ┌────────┐┌──────┐ ┌──────┐ ┌───┐ │
│  │                          │   │CONTINUE││PRINT ││ │ENTER │ │ ▽ │ │
│  └──────────────────────────┘   │        ││FONTS ││ │RESET │ └───┘ │
│                                 │ RESET  ││ TEST ││ │MENU  │       │
│                                 └────────┘└──────┘ └──────┘       │
└─────────────────────────────────────────────────────────────┘
```
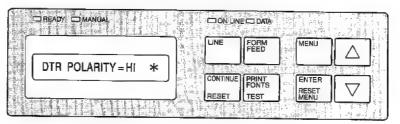
12. Press the **MENU key** once to display "ROBUST XON=ON✱".

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13. Press the △ or ▽ **key** to select ON or OFF and press the **ENTER/RESET MENU key**.
● An asterisk (✻) appears on the display.
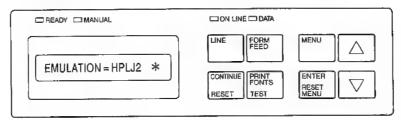
14. Press the **MENU key** once to display "DTR POLARITY=HI✻."
15. Press the △ or ▽ **key** to select HI or LO and press the **ENTER/RESET MENU key**.
● An asterisk (✻) appears on the display.
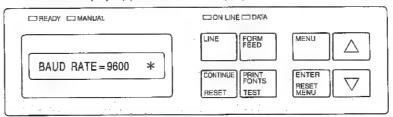

16. Press the **MENU key** until the display shows "READY".
17. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [LJ2]T" appears on the display, and the ON LINE lamp lights.

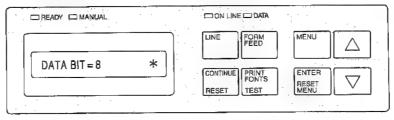1. Press the **LINE key** to set the Laser Printer off-line.
2. Press and hold the **MENU key** until "SYM.SET=<u>ROMAN-8</u>✳" appears on the display.
3. Press the **MENU key** again until "EMULATION=<u>HPLJ2</u>✳" appears on the display.

```
☐ READY ☐ MANUAL          ☐ ON LINE ☐ DATA

                          │LINE │ │FORM │   │MENU │  ┌───┐
                          │     │ │FEED │   │     │  │ △ │
   ┌──────────────────┐   └─────┘ └─────┘   └─────┘  └───┘
   │ EMULATION = HPLJ2  ✳ │
   └──────────────────┘   │CONTINUE│ │PRINT │  │ENTER │  ┌───┐
                          │        │ │FONTS │  │RESET │  │ ▽ │
                          │RESET   │ │TEST  │  │MENU  │  └───┘
```

4. Press the △ or ▽ **key** to select the desired emulation:

   HPLJ2   (HP LaserJet series II)
   FX80   (Epson FX-80)
   IBMGP   (IBM Graphics Printer)
   IBMPP   (IBM Proprinter)
   D630   (Diablo 630/630 ECS)
   HEX   (Hex Dump)
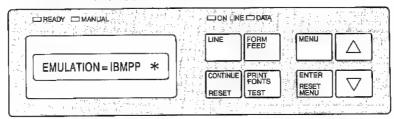
5. Press the **ENTER/RESET MENU key**.
● An asterisk (✳) appears on the display.
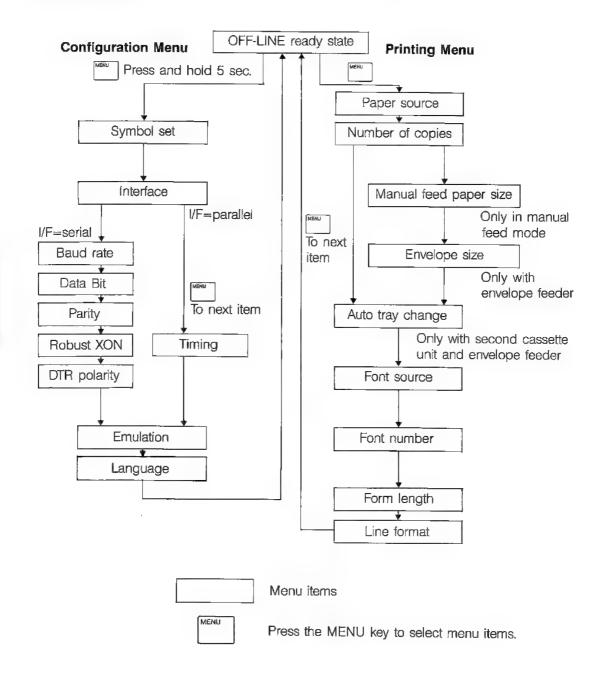
```
☐ READY ☐ MANUAL          ☐ ON LINE ☐ DATA

                          │LINE │ │FORM │   │MENU │  ┌───┐
                          │     │ │FEED │   │     │  │ △ │
   ┌──────────────────┐   └─────┘ └─────┘   └─────┘  └───┘
   │ EMULATION = IBMPP  ✳ │
   └──────────────────┘   │CONTINUE│ │PRINT │  │ENTER │  ┌───┐
                          │        │ │FONTS │  │RESET │  │ ▽ │
                          │RESET   │ │TEST  │  │MENU  │  └───┘
```

6. Press the **MENU key** until the display shows "READY".
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display, to save the setting.
● "READY <u>LJ2</u>T" appears on the display, and the ON LINE lamp lights.

SETTING THE MENU ITEMS

MENU SETTING STRUCTURE

HP LaserJet series II

Configuration Menu

OFF-LINE ready state

Printing Menu

[MENU] Press and hold 5 sec.

[MENU]

Symbol set

Interface

I/F=serial

I/F=parallel

Baud rate

Data Bit

Parity

[MENU]
To next item

Robust XON

Timing

DTR polarity

Emulation

Language

[MENU]
To next
item

Paper source

Number of copies

Manual feed paper size

Only in manual
feed mode

Envelope size

Only with
envelope feeder

Auto tray change

Only with second cassette
unit and envelope feeder

Font source

Font number

Form length

Line format

Menu items

[MENU]   Press the MENU key to select menu items.

For the Epson FX-80, IBM Proprinter, IBM Graphics Printer, and Diablo 630/630 ECS emulations, the menu setting structure, setting items, and selectable values differ depending on the emulation.

The keys used to select menu items and values and the setting procedure are the same as those used for HP LaserJet series II emulation. See page 27 for the Basic Setting Procedure.

With these emulations, the following items can be selected in addition to the items for the HP LaserJet series II emulation.

Orientation

Orientation refers to the direction of print on the page.

Portrait
orientation

Landscape
orientation

Page Size

Page size selects the number of lines that can be printed on a page. There are two modes: normal and extended.

Normal: Prints the normal number of lines
Extended: Prints the extended number of lines

Example:
On letter size   Normal   up to 63 lines
                  Extended up to 66 lines

For extended size printing of characters, the space between the lines is reduced. However, bit images are uniformly compressed vertically. A circle, for example, will be printed with an oval shape.

Auto Feed
(FX-80 only)

This is effective only when the parallel interface is selected. When off and AUTO LF (pin 14 on the parallel interface connector) is enabled, the CR and LF operations are performed for a CR code input only. When AUTO LF is on, the control signals on pin 14 are ignored and always fixed to AUTO LF mode.

SETTING THE MENU ITEMS

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Fixed Select
(FX-80 only)

This is effective only when the parallel interface is selected. When on, $\overline{\text{SELECT IN}}$ (pin 36 on the parallel interface connector) is ignored and the printer is always in the select mode. When off, $\overline{\text{SELECT IN}}$ is effective and the printer is deselected by an input of the DC3 code only when this signal is high.

i

Epson FX-80 Emulation

Printing Menu Items

Item	Display	Selectable values
Paper source	TRAY=A4	TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED*
Number of copies	COPIES=01	01, 02 ... 99
Manual feed paper size	MANUAL=A4	LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5
Envelope size	ENVELOPE=COM-10	COM-10, MONARC, DL, C5
Auto tray change	AUTO TRAY CHG=N	N (NO), Y (YES)
Orientation	ORIENTATION=P	P (Portrait) L (Landscape)
Font number	FONT NUMBER=00	00 (COURIER) 01 (CONDENSE) 02 (EMPHASIZE) 03 (CONDENSE EMPHASIZE)
Page size	PG SIZE=NORMAL	NORMAL, EXTEND

*Option
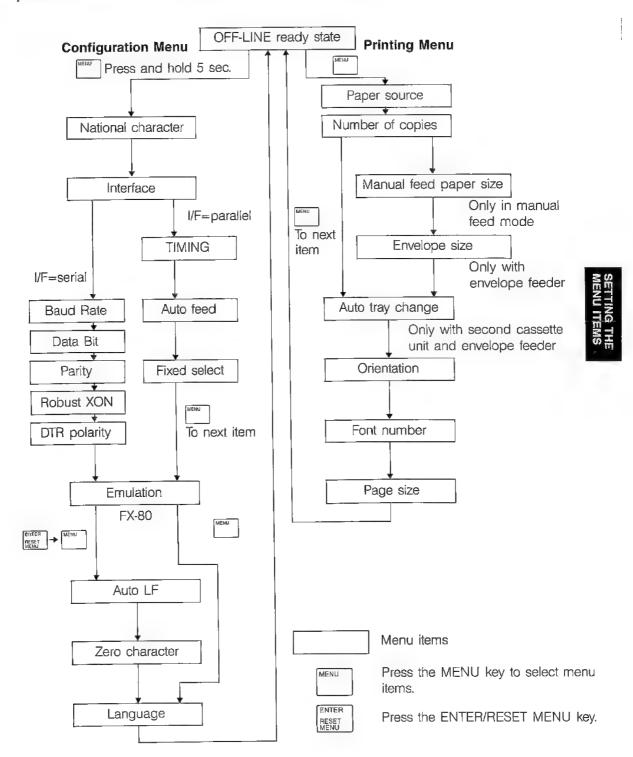
Configuration Menu Items

Item	Display	Selectable Value
National character	NATIONAL=U.S.A.	U.S.A., FRANCE, GERMNY, ENGLND, DNMRK1, SWEDEN, ITALY, SPAIN JAPAN, NORWAY, DNMRK2
Interface	I/F=SERIAL	SERIAL, PARALLEL
Baud rate	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit	DATA BIT=8	8, 7
Parity	PARITY=NON	NON, EVN, ODD
Robust XON	ROBUST XON=ON	ON, OFF
DTR polarity	DTR POLARITY=HI	HI (High), LO (Low)
Timing	TIMING=1	1, 2, 3
Auto feed	AUTO FEED=OFF	OFF, ON
Fixed select	FIX SELECT=ON	OFF, ON
Emulation	EMULATION=FX80	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX
Auto line feed	AUTO LF=OFF	OFF (CR=CR) ON (CR=CR+LF)
Zero character	ZERO="0"	"0", "∅"
Language	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH

MENU SETTING STRUCTURE

Epson FX-80

OFF-LINE ready state

Configuration Menu

[MENU] Press and hold 5 sec.

National character

Interface

I/F=parallel

TIMING

I/F=serial

| Baud Rate |
| Data Bit |
| Parity |
| Robust XON |
| DTR polarity |

| Auto feed |
| Fixed select |

[MENU]
To next item

Emulation

FX-80

[ENTER/RESET MENU] → [MENU]

Auto LF

Zero character

Language

[MENU]
To next item

Printing Menu

[MENU]

Paper source

Number of copies

Manual feed paper size

Only in manual feed mode

Envelope size

Only with envelope feeder

Auto tray change

Only with second cassette unit and envelope feeder

Orientation

Font number

Page size

[MENU]

	Menu items
[MENU]	Press the MENU key to select menu items.
[ENTER/RESET MENU]	Press the ENTER/RESET MENU key.

SETTING THE MENU ITEMS

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IBM Proprinter/Graphics Printer Emulations

Printing Menu Items

| Item	Display	Selectable Value
Paper source	TRAY=A4	TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED*
Number of copies	COPIES=01	01, 02 ... 99
Manual feed paper size	MANUAL=A4	LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5
Envelope size	ENVELOPE=COM-10	COM-10, MONARC, DL, C5
Auto tray change	AUTO TRAY CHG=N	N (NO), Y (YES)
Orientation	ORIENTATION=P	P (Portrait) L (Landscape)
Font number	FONT NUMBER=00	00 (CHARACTER SET 1) 01 (CHARACTER SET 2)
Page size	PG SIZE=NORMAL	NORMAL, EXTEND
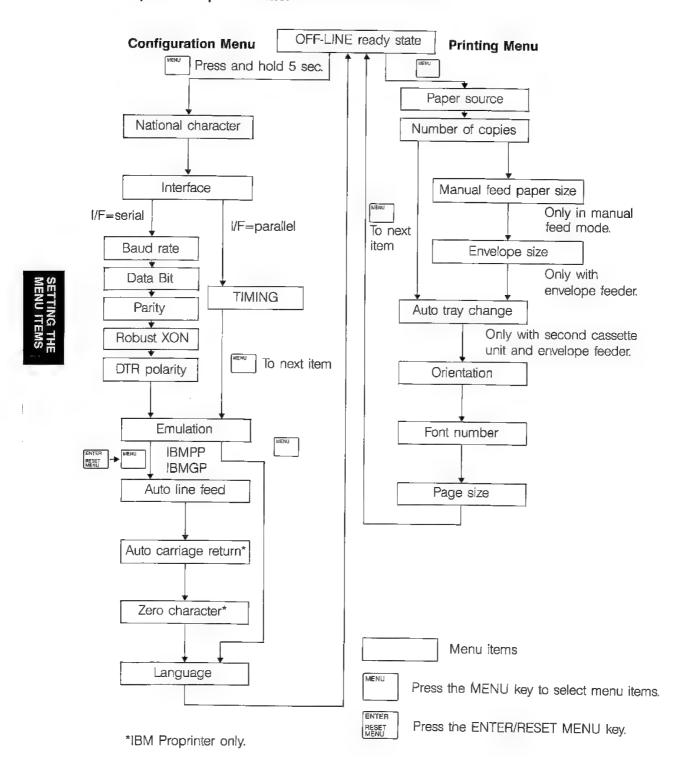
*Option

Configuration Menu Items

Item	Printer Display	Selectable Value
National character	NATIONAL=GLOBAL	GLOBAL (International) D/N (Denmark/Norway)
Interface	I/F=SERIAL	SERIAL, PARALLEL
Baud rate	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit	DATA BIT=8	8, 7
Parity	PARITY=NON	NON, EVN, ODD
Robust XON	ROBUST XON=ON	ON, OFF
DTR polarity	DTR POLARITY=HI	HI (High), LO (Low)
Timing	TIMING=1	1, 2, 3
Emulation	EMULATION=IBMPP	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX
Auto line feed	AUTO LF=OFF	OFF (CR=CR) ON (CR=CR+LF)
*Auto carriage return	AUTO CR=OFF	OFF LF=LF VT=VT ESCJ=ESCJ ON LF=LF+CR VT=VT+CR ESCJ=ESCJ+CR
*Zero character	ZERO="0"	"0", "∅"
Language	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH

*IBM Proprinter only.

SETTING THE
MENU ITEMS

MENU SETTING STRUCTURE

IBM Proprinter/Graphics Printer

	OFF-LINE ready state	
Configuration Menu		**Printing Menu**

[MENU] Press and hold 5 sec.

Configuration Menu (left column):

National character

↓

Interface

I/F=serial / I/F=parallel

Baud rate
Data Bit
Parity
Robust XON
DTR polarity

TIMING

[MENU] To next item

Emulation
IBMPP
IBMGP

[ENTER RESET MENU] → [MENU]

[MENU]

Auto line feed

↓

Auto carriage return*

↓

Zero character*

↓

Language

To next item (center)

[MENU]

Printing Menu (right column):

[MENU]

Paper source

↓

Number of copies

↓

Manual feed paper size
— Only in manual feed mode.

↓

Envelope size
— Only with envelope feeder.

↓

Auto tray change
— Only with second cassette unit and envelope feeder.

↓

Orientation

↓

Font number

↓

Page size

Legend:

	Menu items

[MENU] Press the MENU key to select menu items.

[ENTER RESET MENU] Press the ENTER/RESET MENU key.

*IBM Proprinter only.

SETTING THE
MENU ITEMS

Diablo 630/630 ECS Emulation

Printing Menu Items

| Item	Printer Display	Selectable Value
Paper source	TRAY=A4	TRAY 1 MANUAL FEED TRAY 2* ENVELOPE FEED*
Number of copies	COPIES=01	01, 02 ... 99
Manual feed paper size	MANUAL=A4	LETTER, LEGAL, EXECUT, INVOIC, A4, B5, AFSP, COM-10, MONARC, DL, C5
Envelope size	ENVELOPE=COM-10	COM-10, MONARC, DL, C5
Auto tray change	AUTO TRAY CHG=N	N (NO), Y (YES)
Orientation	ORIENTATION=P	P (Portrait) L (Landscape)
Font source	FONT SOURCE=I	I (Internal font) A (slot A) B (slot B)

Font number	FONT NUMBER=00	International Font
		  00 (COURIER)
		Font Card (Options)
		Diablo 630 (JX-9C1A)
		  00 (Prestige Elite 12)
		  01 (Letter Gothic 12)
		  02 (Bold PS U.S.A.)
		  03 (Pica 10 U.S.A.)
		Diablo 630 ECS (JX-9C3A)
		  00 (Teletex Pica 10)
		  01 (Scientific Pica 10)

Page size	PG SIZE=NORMAL	NORMAL, EXTEND
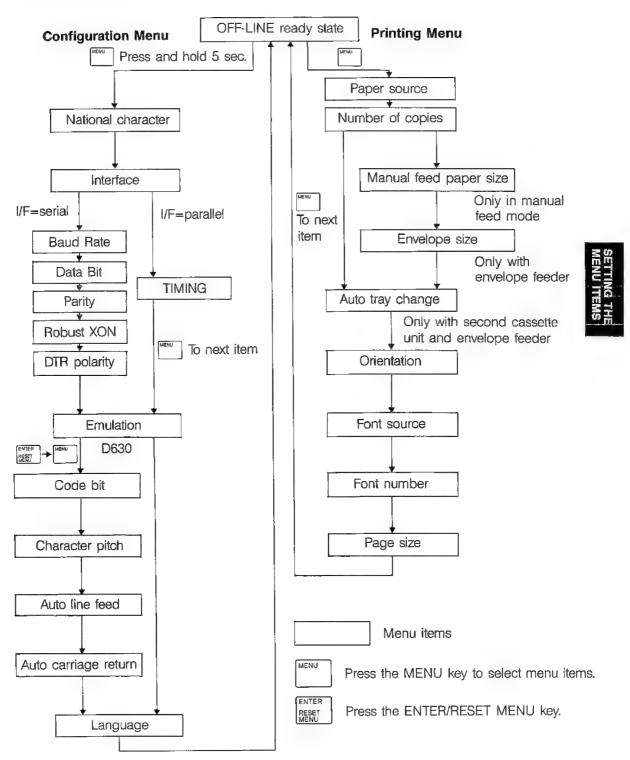
*Option

Configuration Menu Items

Item	Printer Display	Selectable Value
National character	NATIONAL=U.S.A.	U.S.A., FRANCE, GERMNY, ENGLND, DNMRK1, SWEDEN, ITALY, SPAIN, JAPAN, NORWAY, DNMRK2
Interface	I/F=SERIAL	SERIAL, PARALLEL
Baud rate	BAUD RATE=9600	300, 600, 1200, 2400, 4800, 9600, 19200
Data bit	DATA BIT=8	8, 7
Parity	PARITY=NON	NON, EVN, ODD
Robust XON	ROBUST XON=ON	ON, OFF
DTR polarity	DTR POLARITY=HI	HI (High), LO (Low)
Timing	TIMING=1	1, 2, 3
Emulation	EMULATION=D630	HPLJ2, FX80, IBMPP, IBMGP, D630, HEX
Code bit	CODE BIT=7	7, 8 (bits)
Character pitch	CHR PITCH=10	10 (cpi), 12 (cpi), 15 (cpi), PS (pitch)
Auto line feed	AUTO LF=OFF	OFF (CR=CR) ON (CR=CR+LF)
Auto carriage return	AUTO CR=OFF	OFF (LF=LF) ON (LF=LF+CR)
Language	MESSAGE=ENGLISH	ENGLISH, FRENCH, GERMAN, ITALIAN, SPANISH

MENU SETTING STRUCTURE

Diablo 630/630 ECS

```
          Configuration Menu        ┌─ OFF-LINE ready state ─┐    Printing Menu
                    [MENU]  Press and hold 5 sec.    [MENU]
```

Configuration Menu	Printing Menu
National character	Paper source
Interface	Number of copies
I/F=serial — I/F=parallel	Manual feed paper size — Only in manual feed mode
Baud Rate	Envelope size — Only with envelope feeder
Data Bit — TIMING	Auto tray change — Only with second cassette unit and envelope feeder
Parity	Orientation
Robust XON	Font source
DTR polarity — [MENU] To next item	Font number
Emulation D630	Page size
[ENTER RESET MENU] → [MENU]	
Code bit	
Character pitch	
Auto line feed	
Auto carriage return	
Language	

To next item

[   ] Menu items

[MENU] Press the MENU key to select menu items.

[ENTER RESET MENU] Press the ENTER/RESET MENU key.
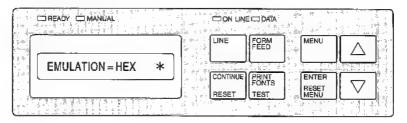
SETTING THE MENU ITEMS

HEX DUMP MODE

This feature (used mainly by programmers) prints the hexadecimal equivalent (ASCII code) of the incoming data.
An example of a hex dump printout is shown below.

HEX CODE   MESSAGE SENT

```
1B 45 1B 26 6C 6C 31 54 1B 26 6C 36 36 50 1B 26    ▨E▨&lllT▨&l66P▨&
6C 4F 1B 28 38 55 1B 28 73 70 31 30 68 31 32 76    lO▨(8U▨(sp10h12v
73 62 33 54 1B 26 6C 36 44 1B 26 61 2D 33 36 30    sb3T▨&l6D▨&a-360
56 0A 0A 0A 0A 0A 0A 0D 1B 26 6B 31 32 36 48 20    V▨▨▨▨▨▨▨▨&k126H
20 1B 26 6B 37 38 48 20 1B 26 6B 31 48 53 53 1B    ▨&k78H ▨&k1HSS▨
26 6B 32 48 08 1B 26 6B 31 32 48 53 1B 26 6B 31    &k2H▨▨&k12HS▨&k1
48 4F 4F 1B 26 6B 32 48 08 1B 26 6B 31 32 48 4F    HOO▨&k2H▨▨&k12HO
1B 26 6B 31 48 46 46 1B 26 6B 32 48 08 1B 26 6B    ▨&k1HFF▨&k2H▨▨&k
31 32 48 46 1B 26 6B 31 48 54 54 1B 26 6B 32 48    12HF▨&k1HTT▨&k2H
08 1B 26 6B 31 32 48 54 1B 26 6B 31 48 2F 2F 1B    ▨▨&k12HT▨&k1H//▨
26 6B 32 48 08 1B 26 6B 31 32 48 2F 1B 26 6B 31    &k2H▨▨&k12H/▨&k1
```

Procedure (Example using HP LaserJet series II emulation)
1. Press the **LINE key** to set the Laser Printer off-line.
2. Press and hold the **MENU key** until "SYM.SET= ROMAN-8 ✱" appears on the display to enter the Configuration Menu setting mode.
3. Press the **MENU key** again until "EMULATION= HPLJ2 ✱" appears on the display.
4. Press the △ or ▽ **key** to select "EMULATION= HEX".
5. Press the **ENTER/RESET MENU key**.
● An asterisk (✱) appears in the display.

6. Press the **MENU key** until "READY" appears on the display.
7. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display to save the setting.
● "READY [HEX]T" appears on the display, and the ON LINE lamp lights.

Since all command codes such as line feed, form feed, etc. are converted to their hexadecimal equivalent, the Laser Printer does not execute these commands when they are received. Thus, the last page will not be printed, and data will remain in the print buffer. Use the following procedure to print the last page:

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press the **FORM FEED key**.

LINES PER PAGE

The lines per page will always default to the number given below when the printer is turned on.

Normal Size

EMULATION	LPI*	ORIENTATION	PORTRAIT									
		PAPER SIZE**	LE	LL	EX	IN	A4	B5	CM	MO	C5	DL
HP LaserJet series II		6 LPI	60	78	57	45	64	54	51	39	48	46
Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS		6 LPI	63	81	60	48	67	58	54	42	51	49
		8 LPI	84	108	80	64	90	77	72	56	68	65
		12 LPI	126	162	120	96	134	115	108	84	102	98

Normal Size

EMULATION	LPI*	ORIENTATION	LANDSCAPE									
		PAPER SIZE**	LE	LL	EX	IN	A4	B5	CM	MO	C5	DL
HP LaserJet series II		6 LPI	45	45	37	27	43	37	19	17	32	20
Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS		6 LPI	48	48	40	30	46	40	21	20	35	23
		8 LPI	63	63	53	39	62	53	28	26	46	30
		12 LPI	95	95	80	59	92	79	42	39	69	45

SETTING THE MENU ITEMS

Extended Size

| EMULATION | LPI* | ORIENTATION | PORTRAIT | | | | | | | | | |
		PAPER SIZE**	LE	LL	EX	IN	A4	B5	CM	MO	C5	DL
Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS		6 LPI	66	84	63	51	70	60	57	45	54	51
		8 LPI	88	112	84	68	93	80	76	60	72	68
		12 LPI	132	168	126	102	140	120	114	90	108	102

Extended Size

| EMULATION | LPI* | ORIENTATION | LANDSCAPE | | | | | | | | | |
		PAPER SIZE**	LE	LL	EX	IN	A4	B5	CM	MO	C5	DL
Epson FX-80 IBM Proprinter IBM Graphics Printer Diablo 630/630 ECS		6 LPI	51	51	43	33	49	42	24	23	38	25
		8 LPI	68	68	58	44	65	56	32	30	51	34
		12 LPI	102	102	86	66	98	84	48	45	76	50

This mode can be used with the Epson FX-80, IBM Proprinter, IBM Graphics Printer and Diablo 630/630 ECS emulations.

  * LPI ... line per inch

  ** Paper size   LE ... Letter

                            LL ... Legal

                            EX ... Executive

                            IN ... Invoice

                            CM... Commercial 10 (Business)

                            MO... Monarch

                            C5 ... International C5

                            DL ... International DL

PRINTING WIDTH
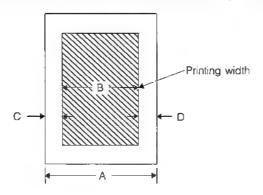
In the portrait mode, the printing width for each paper size is as shown below.

The maximum printing width on A4 size paper is 2,400 dots, allowing 80 characters to be printed on one line at 10 cpi.

NOTE
When printing 80 characters/line on A4 size paper, in some cases characters may print beyond the paper edge. Avoid printing 80 characters/line on A4 size paper and reduce the number of characters per line.

(Unit: dots)

Paper Size	A	B	C	D
LETTER	2550	2400	50	100
LEGAL	2550	2400	50	100
EXECUTIVE	2175	2025	50	100
INVOICE	1650	1500	50	100
A4 (HPLJII)	2480	2338	50	92
A4 (HPLJII) 80 CHR	2480	2400	50	30
A4 (4EMUL)	2480	2400	50	30
B5	2149	2007	50	92
COM-10	1237	1087	50	100
MONARCH	1162	1012	50	100
C5	1913	1771	50	92
DL	1299	1157	50	92
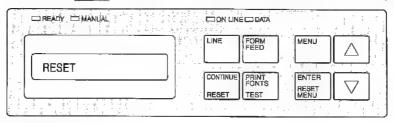
RESETTING THE LASER PRINTER

The Laser Printer can be reset to the panel default settings or its factory default settings with the procedure below.

Panel Default Settings
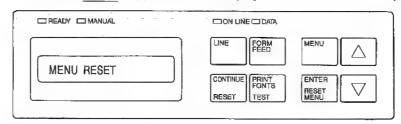
Many software packages send printer commands which will override the panel default settings. Reset the printer at the start of each job to ensure that the panel default settings are in effect.

1. Press the **LINE key** to set the Laser Printer off-line.
2. Press and hold the **CONTINUE/RESET key** until "RESET" appears on the display.
- The Laser Printer is reset to the settings made through the Printing Menu.
- In the HP LaserJet series II emulation, temporary soft fonts and temporary macros are reset.
- Stored page data is cleared.
- "READY [LJ2]T" appears on the display, and the ON LINE lamps lights.

Factory Default Settings

1. Press the **LINE key** to set the Laser Printer off-line.
- If the Laser Printer is still printing, the ON LINE lamp blinks. Wait until the ON LINE lamp turns off.
2. Press and hold the **ENTER/RESET MENU key** until "MENU RESET" appears on the display.
- All items in the Printing Menu and some items in the Configuration Menu are initialized.
- In the HP LaserJet series II emulation, temporary soft fonts and temporary macros are reset.
- Stored page data is cleared.
- "READY [LJ2]T" appears on the display, and the ON LINE lamps lights.

Factory Default Settings

Item	Default Settings	HP	FX	PP	GP	D6
Paper source	TRAY 1	O	O	O	O	O
Number of copies	1	O	O	O	O	O
Auto tray change	OFF	O	O	O	O	O
Font source	Internal	O				O
Font number	0	O	O	O	O	O
Form length	See table below.	O				
Orientation	Portrait		O	O	O	O
Page size	Normal		O	O	O	O
Auto line feed	OFF		O	O	O	O
Zero character	0		O	O		
Auto carriage return	OFF			O		O
Code bit	7 bit					O
Character pitch	10 cpi					O

Paper Size	Form Length
LETTER	60 lines/page
LEGAL	78
EXECUTIVE	57
INVOICE	45
A4	64
B5	55

NOTES
- "O" indicates items that are reset to Default Settings in each emulation.
- Interface, emulation, symbol set, national character, manual feed paper size, envelope size, and timing are not reset, but remain at their current settings.

FONTS

Three types of fonts can be used with your Laser Printer: resident fonts, card fonts, and downloadable fonts (soft fonts).

Resident Fonts

The fonts that can be used in each emulation mode are given below. See the character set printouts in the APPENDIX, pages 102 to 106.

HP LaserJet Series II	Courier, courier bold, line printer
Epson FX-80	Courier, script, elite, elite script, condense, condense script
IBM Proprinter	Courier, script, elite, elite script, condense, condense script
IBM Graphics Printer	Courier, script, condense, condense script
Diablo 630	Courier
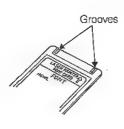
Font Card

To use a font card, insert it face up into a font card slot (A or B) located on the left side of the Laser Printer. The font card's top face has two grooves on the end which is inserted first.

Grooves

CAUTION

Be sure to insert or remove the font card while the ON LINE lamp and the DATA lamp are off. Inserting or removing the font card while these lamps are either lit or blinking may result in erratic printing or hardware errors.
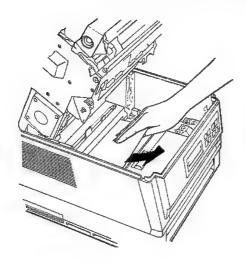
SETTING THE MENU ITEMS
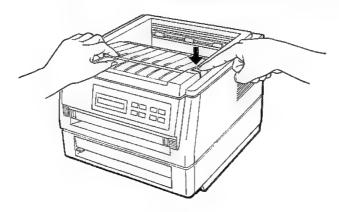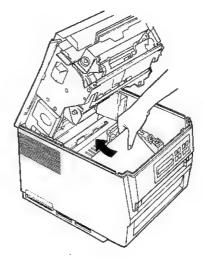
MISFEED REMOVAL

The Laser Printer stops when a misfeed occurs. The display will show "PAPER JAM". After removing the misfed paper and clearing the paper jam error, the page that jammed will be reprinted. In some cases, two pages which were in the Laser Printer mechanism at the time of the paper jam (the one being printed and the other one being ejected) are reprinted. Therefore, a page that was already printed — the one that was not misfed — may also be reprinted in addition to the misfed paper.

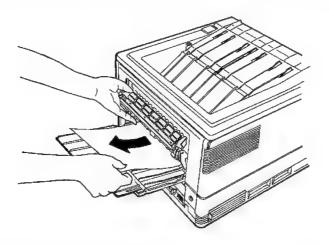1. Press the **upper unit release button** to open the Laser Printer.
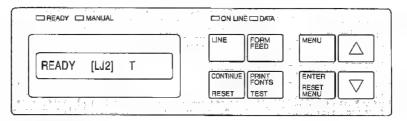

2. Remove the misfed paper.

- If no paper is found:
  Check the paper cassette for misfed paper.
  Open the face up tray and lift the paper guide to check for misfed paper.

3. Close the Laser Printer, press the **CONTINUE/RESET key**.
- The ON LINE lamp lights. "READY [LJ2]T" appears on the display, and when "READY" stops blinking, printing can continue.

| CAUTIONS |

- If the paper is torn while it is being removed, be sure to remove all pieces. To minimize torn pieces, slowly and carefully remove misfed paper.
- Be careful not to damage the photoconductive drum or transfer charger wires. For this reason, do not use pointed or sharp tools to remove misfed paper.
- Be careful not to touch the fusing area as it is hot.

Toner Kit Required

When the display shows "REPL. TONER KIT", the toner cartridge should be replaced. At the same time, the toner collecting container and the roller cleaner must also be replaced.
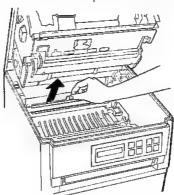
The toner cartridge replacement kit includes a toner cartridge, toner collecting container, and roller cleaner.

1. Press the **upper unit release button** to open the Laser Printer.
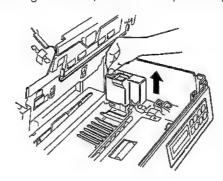2. Remove the used roller cleaner from the top of the fusing unit.
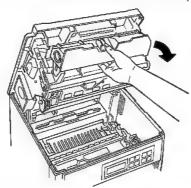
   | CAUTION |

   The fusing unit is hot.

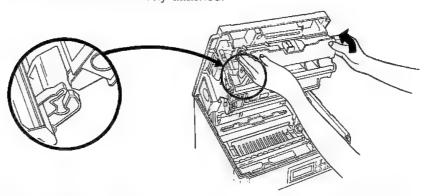   Exercise care and hold only the green knob of the roller cleaner. Also do not touch the photoconductive drum.

3. Remove the new roller cleaner from its plastic bag and install it on top of the fusing unit.
4. Remove the full toner collecting container and install the new toner collecting container.
● Place the full toner collecting container into the plastic bag of the new toner collecting container, seal and dispose of properly.

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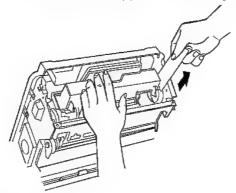
5. Lift up the green lock plate on the top side of the toner cartridge and rotate and pull out to detach it from the developer cartridge.

6. Shake the new toner cartridge horizontally four or five times to loosen the toner.
7. Align the toner cartridge slots with the developer cartridge hooks and rotate until it clicks and is securely attached.

8. Hold the toner cartridge in place and pull out the sealing tape from the toner cartridge to release toner into the developer cartridge.
With the upper unit in a fully upright position, tap on the toner cartridge four or five times with the upper unit in a fully upright position.

9. Close the Laser Printer.
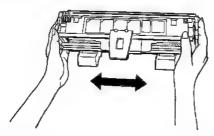
Developer Cartridge Required

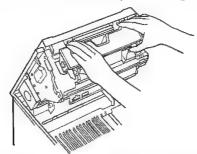When the display shows "REPL. DEVELOPER", the developer cartridge should be replaced. Note that the toner cartridge, toner collecting container, and roller cleaner must also be replaced at the same time.
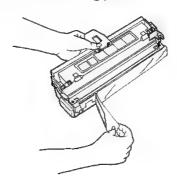
1. Press the **upper unit release button** to open the Laser Printer.
2. Press the green levers on the developer cartridge with both hands and pull out the toner and developer cartridges together.
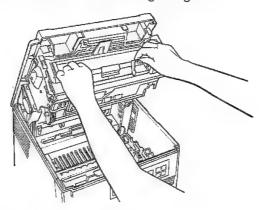
3. Remove the new developer cartridge from the plastic bag. Place the old developer and toner cartridges into the plastic bag, seal and dispose of properly.
4. Remove the protective plastic cover.
5. Shake the new developer cartridge vigorously in a horizontal direction four or five times.
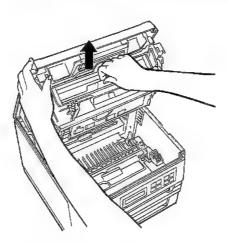
6. Place the developer cartridge on a level surface, hold it in place, and remove the covering material.
● Be careful not to touch the developer roller.
● Do not remove the sealing plate on the other side of the developer cartridge.

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7. Press the green levers on the developer cartridge with both hands and slide it into the Laser Printer along the guides.

8. Remove the tape securing the sealing plate and pull out the sealing plate.
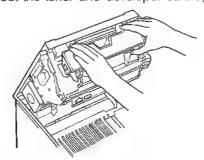
9. Install the new toner kit.
● For installation procedure, see page 70.
10. Close the Laser Printer.
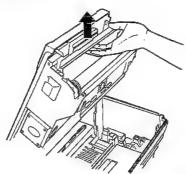
Photoconductor Cartridge Required

When the display shows "REPL. PHOTO. DRUM", the photoconductor cartridge and ozone filter should be replaced.
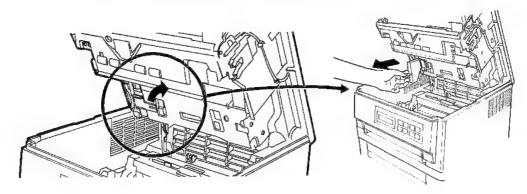
1. Press the **upper unit release button** to open the Laser Printer.
2. Press the green levers on the developer cartridge with both hands and pull out the toner and developer cartridges together.
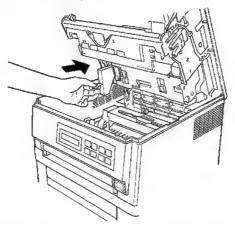

3. Hold the frame of the photoconductor cartridge and pull it out along the guides.
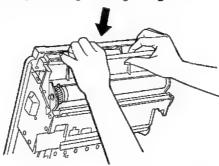
4. Turn the green stopper clockwise and remove the ozone filter.
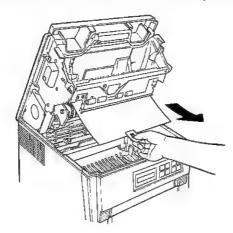
5. Remove the new ozone filter from the top of the packing material, remove from the plastic bag, and insert it into the Laser Printer. Turn the green stopper back into place.
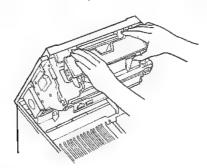
6. Remove the new photoconductor cartridge from the plastic bag.
With the photoconductor drum facing down, fully insert the photoconductor cartridge, sliding it along the guides.

7. Hold the photoconductor cartridge and pull the green tab to remove the protective sheet. Be sure not to leave any torn pieces in the Laser Printer.

8. Reinstall the developer and toner cartridges.

9. Close the Laser Printer.

Paper Required

When the display shows "PAPER OUT TRAY1", pull out the paper cassette in use.
If it is empty, load paper in the cassette (see LOADING PAPER, page 16).
The "PAPER OUT TRAY1" message will go out after inserting a refilled paper cassette into the Laser Printer.
If paper is in the cassette, see MISFEED REMOVAL.

SERVICE REQUIRED

When the following messages appear on the display, service by an authorized Sharp Service Technician is required. Contact your service center as soon as possible.

DISPLAY	MEANING
SERVICE (C1)	Optical System Error
SERVICE (C2)	Main Motor Defective
SERVICE (C3)	Polygon Motor Defective
SERVICE (C4)	High Heater Temperature
SERVICE (C5)	Low Heater Temperature
SERVICE (C6)	Thermistor Open
SERVICE (C7-C9)	(Reserved)

DISPLAY	MEANING
SERVICE (E1)	ICU ROM Checksum Error
SERVICE (E2)	ICU RAM Read/Write Error
SERVICE (E3)	Expansion Memory Error
SERVICE (E4)	ICU Hardware Read/Write Error
SERVICE (E5)	Non-volatile RAM Checksum Error
SERVICE (E6-E9)	(Reserved)

DISPLAY	MEANING
SERVICE (P1)	PCU ROM Checksum Error
SERVICE (P2)	PCU RAM Read/Write Error
SERVICE (P3)	Non-volatile RAM Read Error
SERVICE (P4)	Serial Communication Error
SERVICE (P5-P6)	(Reserved)

GENERAL INFORMATION

The maintenance procedures that are to be performed by the user are given below.

Cleaning the Cabinet
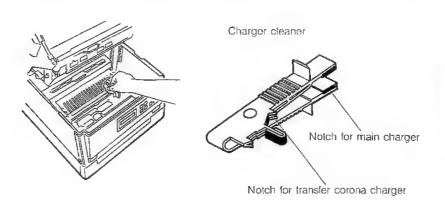
When the Laser Printer cabinet becomes dirty or stained, wipe with a soft, clean cloth. If necessary, dampen the cloth with water. Do not use thinner, benzene, or similar volatile cleaning agents.

Cleaning the Corona Wires

If the printouts are blotchy or streaky, dirty corona wires may be the cause.
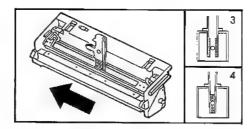
Transfer corona charger

1. Turn off the power.
2. Press the **upper unit release button** to open the Laser Printer.
3. Slide the charger cleaner with the notch for the transfer corona charger resting on the wire case as shown below.

Charger cleaner

Notch for main charger

Notch for transfer corona charger

GENERAL INFORMATION

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Main charger
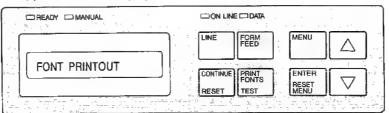
1. Carefully pull out the toner and developer cartridges.
2. Carefully pull out the photoconductor cartridge and place it on a level surface. DO NOT TOUCH THE PHOTOCONDUCTOR DRUM.
3. Open the tip of the charger cleaner as shown in the figure and insert it in the corona wire case.
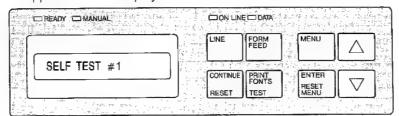
● Note that inserting the charger cleaner with its tip closed may break and damage the corona wire.

4. Close the tip of the charger cleaner and slide it only in the direction of the arrow three to five times.
5. Open the tip of the charger cleaner to remove it from the corona wire case.
6. Reinstall the photoconductor cartridge, toner and developer cartridges, and close the Laser Printer.

● Store the charger cleaner with the supplies. Do not leave it inside the printer.

There are three printout functions: test printout, menu setting list, and font list.

Executing the Printout Function
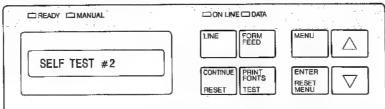
1. Press the **power switch** to turn on the power.
● "WARMING UP" appears on the display.
● The ON LINE lamp lights, the READY lamp lights, and "READY [LJ2]T" appears on the display. In about 60 seconds, "READY" stops blinking.
2. Press the **LINE key** to set the printer off-line.
● The ON LINE lamp turns off.
3. Press the **PRINT FONTS/TEST key** to select the desired printout function.
● To select FONT PRINTOUT, press this key once so that "FONT PRINTOUT" appears on the display.

● To select SELF-TEST #1, press and hold the key until "SELF TEST #1" appears on the display.

● To select SELF-TEST #2, press and hold the key until "SELF TEST #2" appears on the display.

● The DATA lamp lights and the selected function is printed out.
4. When printout is completed, press the **LINE key** to set the Laser Printer on-line.

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Font List

HP LaserJet series II emulation

During HP LaserJet series II emulation, this function prints out the font list. The font number and symbol set, pitch, etc. are printed out for the available fonts.

JX-9C4M (JX-9C5M) font card is in the A slot and JX-9C4A (JX-9C5A) font card is in the B slot.

SAMPLE

Font List For HP LaserJet series II

FONT No.	NAME		FONT ID	SYMBOL SET	PITCH	POINT SIZE	PRINT SAMPLE
SOFT FONTS (PERMANENT)		FONT SOURCE (S)					
00	Bodoni Condensed Bold		8008	0U	PS	24.0	ABCdef#$@[\]
01	TmsRmn	Bold	88	8U	PS	30.0	ABCdef#$[ÀÂ°ÇÑ¡¿£§
SOFT FONTS (TEMPORARY)							
	Helv		321	0U	PS	12.0	ABCdef#$@[\]^`{|}~12
A SLOT FONT CARD		FONT SOURCE (A)					
00	Prestige			8U	12.0	10.0	ABCdef#$@[\]^`{|}~12 ÀÂ°ÇÑ¡¿£§êàèëöÄØåæÄÜ
01	Prestige	Bold		8U	12.0	10.0	ABCdef#$@[\]^`{|}~12 ÀÂ°ÇÑ¡¿£§êàèëöÄØåæÄÜ
02	Prestige	Italic		8U	12.0	10.0	ABCdef#$@[\]^`{|}~12 ÀÂ°ÇÑ¡¿£§êàèëöÄØåæÄÜ
03	Prestige			8U	12.0	10.0	
04	Prestige	Bold		8U	12.0	10.0	
05	Prestige	Italic		8U	12.0	10.0	
B SLOT FONT CARD		FONT SOURCE (B)					
00	TMS RMN			0U	PS	10.1	ABCdef#$@[\]^`{|}~12
01	Tms Rmn	Bold		0U	PS	10.1	ABCdef#$@[\]^`{|}~12
02	Tms Rmn	Italic		0U	PS	10.1	ABCdef#$@[\]^`{|}~12
03	Helv	Bold		0U	PS	14.4	ABCdef#$@[\]^`{|}~1
04	Tms Rmn	Light		0U	PS	7.9	ABCdef#$@[\]^`{|}-12
05	Line Printer	Light		8U	16.7	8.5	
INTERNAL FONTS		FONT SOURCE (I)					
00	COURIER			8U	10.0	12.0	ABCdef#$@[\]^`{|}~12 ÀÂ°ÇÑ¡¿£§êàèëöÄØåæÄÜ
01	COURIER			10U	10.0	12.0	ABCdef#$@[\]^`{|}~12 íó|┤╡╢╖╕╣║╗╝┐
02	COURIER			11U	10.0	12.0	ABCdef#$@[\]^`{|}~12 íó|┤╡╢╖╕╣║╗╝┐
03	COURIER			0N	10.0	12.0	ABCdef#$@[\]^`{|}~12 ¡¢°´¶¸¹»¼ÁÈÉÍÎÐÒÔ×ØÚ
04	COURIER	Bold		8U	10.0	12.0	ABCdef#$@[\]^`{|}~12 ÀÂ°ÇÑ¡¿£§êàèëöÄØåæÄÜ
05	COURIER	Bold		10U	10.0	12.0	ABCdef#$@[\]^`{|}~12 íó|┤╡╢╖╕╣║╗╝┐

SAMPLE

FONT No.	NAME		FONT ID	SYMBOL SET	PITCH	POINT SIZE	PRINT SAMPLE
INTERNAL FONTS		FONT SOURCE (I)					
06	COURIER	Bold		11U	10.0	12.0	ABCdef#$@[\]^`{|}~12 íó|┤┤┐┤┐┘┴┴┌┬┴┤┐┴┤┤■
07	COURIER	Bold		0N	10.0	12.0	ABCdef#$@[\]^`{|}~12 ¡¢°´¶¸¹»½ÁÈÉÍÎÐÒÓ×ØÛ
08	LINE PRINTER			8U	16.7	8.5	ABCdef#$@[\]^`{|}~12 ÀÄ°ÇÑ¡¿£§èàáäöÅØåæ×Û
09	LINE PRINTER			10U	16.7	8.5	ABCdef#$@[\]^`{|}~12 íó|┤┤┐┤┐┘┴┴┌┬┴┤┐┴┤┤■
10	LINE PRINTER			11U	16.7	8.5	ABCdef#$@[\]^`{|}~12 íó|┤┤┐┤┐┘┴┴┌┬┴┤┐┴┤┤■
11	LINE PRINTER			0N	16.7	8.5	ABCdef#$@[\]^`{|}~12 ¡¢°´¶¸¹»½ÁÈÉÍÎÐÒÓ×ØÛ
12	COURIER			8U	10.0	12.0	
13	COURIER			10U	10.0	12.0	
14	COURIER			11U	10.0	12.0	
15	COURIER			0N	10.0	12.0	
16	COURIER	Bold		8U	10.0	12.0	
17	COURIER	Bold		10U	10.0	12.0	
18	COURIER	Bold		11U	10.0	12.0	
19	COURIER	Bold		0N	10.0	12.0	
20	LINE PRINTER			8U	16.7	8.5	
21	LINE PRINTER			10U	16.7	8.5	
22	LINE PRINTER			11U	16.7	8.5	
23	LINE PRINTER			0N	16.7	8.5	

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Epson FX-80 emulation
IBM Proprinter emulation
IBM Graphics Printer emulation
Diablo 630/630 ECS emulations

In these emulations, the font number and all the characters in the resident font or the font card for each emulation are printed out.

SAMPLE

<u>Font List For FX-80</u>

National Character = U.S.A. ___

FONT No.	NAME	PRINT SAMPLE
00	COURIER	!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~   !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFG HIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
01	CONDENSE	!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~   !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFG HIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
02	EMPHASIZE	!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~   !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFG HIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
03	CONDENSE EMPHASIZE	!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVW XYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~   !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFG HIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

SAMPLE

National Character = Global

FONT No.	NAME	PRINT SAMPLE
00	CHARACTER SET 1	!"#$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno pqrstuvwxyz{|}˜ áíóúñÑª⁰ ¿─½¼¡«»▓├┤╢╖╕╣║╗╝┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀ αβΓπΣσμτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°··√ⁿ²■
01	CHARACTER SET 2	♥♦♣♠ § !"#$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno pqrstuvwxyz{|}˜ ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑª⁰ ¿─½¼¡«»▓├┤╢╖╕╣║╗╝┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀ αβΓπΣσμτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°··√ⁿ²■

GENERAL
INFORMATION

SAMPLE

Font List For IBM Graphics Printer

National Character = Global

FONT No.	NAME	PRINT SAMPLE
00	CHARACTER SET 1	!"#$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno pqrstuvwxyz{ }~ áíóúñÑªº ¿──½¼¡«»▒▓ ┤╡╢╖╕╣║╗╝╜╛┐└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀ αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
01	CHARACTER SET 2	♥♦♣♠ § !"#$%&'()*+,-./01234567 89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno pqrstuvwxyz{ }~ ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº ¿──½¼¡«»▒▓ ┤╡╢╖╕╣║╗╝╜╛┐└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀ αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

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JX-9C1A (JX-9C1B) font card is in the A slot and JX-9C3A (JX-9C3B) font card is in the B slot.

SAMPLE

<u>Font List For Diablo 630/ECS</u>

National Character = U.S.A.

FONT No.	NAME	PRINT SAMPLE

A SLOT FONT CARD   FONT SOURCE (A)

00 Prestige Elite 12
```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
YZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
     ESC Y   ¢
     ESC Z   ¬
```

01 Letter Gothic 12
```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
YZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
     ESC Y   ¢
     ESC Z   ¬
```

02 Bold PS 12 U.S.A.
```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
YZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
     ESC Y   ¢
     ESC Z   ¬
```

03 Pica 10 U.S.A
```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
YZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
     ESC Y   ¢
     ESC Z   ¬
```

B SLOT FONT CARD   FONT SOURCE (B)

00 Teletex Pica 10
```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
YZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~   0123456789£°ñå °
ƒΦr⁴⁵⁶⁷⁸⁹èé|äüö ¡¢£$¥#§¤˜á≪,F.⁄°±²³×µ¶·+˘à≫¼½¾¿`˙´ˆ˜¯˘˙··
··°¸˛˘ˇ_¹⁰∞™†·´¸ç˜˘ˇ¼⅜⅝¾ΩÆÐªĦ⁻ĲĿŁØŒºÞŦŊⁿĸæđðħıĳĸłøœßŧŋ
     ESC Y   ¢
     ESC Z   =
```

01 Scientific Pica 1
```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
YZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~   ←→↑↓⊙□¨¶†£∫⌡°A ↙
∝∂          ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤϒΦΧΨΩ∑∇()[]∫εαβΥδεζηθ
ικλμνξοπρστυφχψωℓ·√]{./₀₁₂₃₄₅₆₇₈₉±⁻≦≧~≈⁰¹²³⁴⁵⁶⁷⁸⁹+−×÷∞
     ESC Y   ¢
     ESC Z   ´
```

INTERNAL FONTS   FONT SOURCE (I)

00 COURIER
```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWX
YZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
     ESC Y   ¢
     ESC Z   ¬
```

Menu Setting List (SELF-TEST #1)

This function prints out the settings of the Printing Menu, Configuration Menu and other settings. It also prints out the remaining life of the supplies and printer. A sample printout of the menu settings is shown below.

SAMPLE

```
┌────────────────────────────────────────────────────────┐
│        ┌──────────────────────────────────┐            │
│        │        MENU SETTING LIST         │            │
│        └──────────────────────────────────┘            │
│  ┌──────────────────────────────────────────────────┐  │
│  │               Printing Menu                      │  │
│  └──────────────────────────────────────────────────┘  │
│                                                        │
│    Paper Source         = Tray                         │
│    Copies               = 1                            │
│    Font Source          = Internal Font                │
│    Font Number          = 00                           │
│    Form Length          = 60   Lines                   │
│    Line Format          = 77                           │
│  ┌──────────────────────────────────────────────────┐  │
│  │             Configuration Menu                   │  │
│  └──────────────────────────────────────────────────┘  │
│                                                        │
│    Symbol Set           = ROMAN-8                      │
│    Interface            = Parallel                     │
│    Timing               = 1                            │
│    Emulation            = HP LaserJet series II        │
│    Message              = English                      │
│  ┌──────────────────────────────────────────────────┐  │
│  │              Other Information                   │  │
│  └──────────────────────────────────────────────────┘  │
│                                                        │
│    Tray Paper Size      = Letter                       │
│    Current Font ID      = None                         │
│    Current Typeface     = COURIER                      │
│    Program ROM          = EPR1A,EPR2A                   │
│    Internal Font ROM    = ICG1A,ICG2A                   │
│    PCU-Firmware         = PCU-I                        │
│    Installed Memory     = 512   KBytes                 │
│  ┌──────────────────────────────────────────────────┐  │
│  │                 Life Count                       │  │
│  └──────────────────────────────────────────────────┘  │
│                                                        │
│    Machine              =         1 Sheets             │
│    Photoconductor       =         1 Sheets             │
│    Developer            =         1 Sheets             │
└────────────────────────────────────────────────────────┘
```

Test Printout (SELF-TEST #2)

The purpose of this printout function is to verify that the Laser Printer is working properly. A full sheet of a test pattern using the internal character set is printed out. The figure below shows a portion of this sheet. A line border encloses the printing area on the page.

SAMPLE

```
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`
()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`a
)*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`ab
*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abc
+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcd
,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcde
-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdef
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefg
/0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefgh
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghi
123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghij
23456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijk
3456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijkl
456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklm
56789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmn
6789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmno
789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnop
89:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopq
9:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuv
>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvw
?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwx
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxy
ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
```

PRINTER TROUBLE?

Errors

When any of the following error messages appears on the display, remedy the error condition following the procedure below.

Error Message	Description	Remedy
INPUTBUFFER FULL	The host computer ignores the printer's busy state and continues to send data.	Check the protocol signal line between the printer and the host computer or adjust the setting. Press the CONTINUE/ RESET key.
COVER OPEN	Upper unit of printer is not closed properly.	Close the upper unit firmly and check that it is properly latched. Press the CONTINUE/RESET key.
INTERFACE ERROR	RS-232C interface error (For example, framing error.)	Check the RS-232C interface function and execute it again. Press the CONTINUE/ RESET key.
DATA LOSS ERROR	Too many characters on one line.	Delete excess characters and execute again. Press the CONTINUE/ RESET key.
PAPER OUT TRAY ✳✳✳ (✳✳✳ = TRAY1 TRAY2)	Paper empty or paper cassette removed.	Add paper or replace the paper cassette. If the paper size matches the previous setting, the printer will return on-line. See LOADING PAPER, page 16.
PAPER JAM	Paper is jammed.	Open the cover and remove the misfed paper. Press the CONTINUE/ RESET key. See MISFEED REMOVAL, page 68.
REPL. DEVELOPER	End of developer cartridge life.	Replace the developer cartridge. See SUPPLIES REQUIRED, page 72.

Error Message	Description	Remedy
REPL. PHOTO. DRUM	End of photoconductor cartridge life.	Replace the photoconductor cartridge. See SUPPLIES REQUIRED, page 74.
REPL. TONER KIT	Toner cartridge is almost empty.	Replace with a new toner kit. See SUPPLIES REQUIRED, page 70.
REPL. TONER COLL.	Toner collecting container is not installed properly.	Install the toner collecting container properly.
	Toner cartridge was not replaced when the "REPL. TONER KIT" was displayed.	Replace with a new toner kit. See SUPPLIES REQUIRED, page 70.
	Toner collecting container was not replaced when the toner cartridge was replaced.	Replace the toner collecting container.
DATA MEMORY FULL	If on-line and printing, printing will continue on to the next page.	When space becomes available in the user memory, press the CONTINUE/ RESET key.
	While entering soft font or macro, the printer goes off-line.	Option 1: Press the CONTINUE/ RESET key. The soft font or macro being entered prior to going off-line is deleted and the printer goes back on-line. Option 2: Press and hold the CONTINUE/RESET key until "RESET" appears on the display. All temporary soft fonts and macros are deleted and the printer goes back on-line.

User Troubleshooting

Before calling for service, try the remedies given below.

Laser Printer does not turn on
- Laser Printer plugged in?
    Plug the Laser Printer into a grounded outlet.
- Power switch on?
    Turn the power switch on.

Laser Printer turns on but does not print data from computer
- Is Laser Printer on-line?
    Press the LINE key.
- Is interface cable connected properly?
    Connect the interface cable. Also check that the proper interface mode is selected.
- Is there an error message on the display?
    Clear error according to procedures in previous section.
- Is the DATA lamp blinking?
    Press the LINE key to set the printer off-line and then press the FORM FEED key. See page 21 for more information.

Laser Printer prints blank pages
- Are all supplies installed?
    Install the supplies. See SUPPLIES REQUIRED, page 70.

Streaky, blotchy printout or dark line in printout
- Corona wires dirty?
    Clean corona wires. See USER MAINTENANCE, page 78.

Dirty printout
- Was the roller cleaner replaced at the time of toner replacement?
    Replace the roller cleaner.

Frequent paper jams
- Was paper fanned before loading?
    Fan paper and reload.
- Is cassette overloaded?
    Remove some paper from cassette.
- Paper too heavy?
    Check specifications for types of paper.
- Paper damp?
    Replace with dry paper. Be sure to store paper in a dry location.

SHIPPING INSTRUCTIONS

Follow the procedure below whenever transporting or shipping the Laser Printer.

1. Press the **upper unit release button** to open the Laser Printer.
2. Remove the toner, developer, and photoconductor cartridges and the toner collecting container.
   NOTE:
   Any time the photoconductor cartridge is removed from the printer, it must be put in the black plastic bag included with the original packing materials. This is required to prevent the photoconductor from being overexposed to ambient light.
3. Remove the paper from the paper cassette, and secure the pressure plate with tape.
4. Close the Laser Printer.
5. Pack the printer, reversing the order of UNPACKING instructions on page 1.

NOTES:
1. When returning the printer for repair include:
   A) A written explanation of the problem encountered.
   B) Any print samples which may help in diagnosing the problem.
2. Do not include any cartridges (toner, developer, or photoconductor) or the toner collecting container when returning the printer for servicing, unless specifically requested by SHARP.

GENERAL INFORMATION

SPECIFICATIONS

Printer	Desktop type
Print process	Diode laser, dry electro-photographic method
Page orientation	Portrait (upright) or landscape (horizontal)
Print speed	6 pages per minute maximum
	9 pages per minute maximum (JX-9500H)
Paper size	A4, B5, letter, legal, invoice, executive
Envelope size	International DL, International C5, Commercial 10 (Business), Monarch
Print area	2400 dots × 4080 lines maximum
Dot resolution	300 dots per inch
Paper feed	Automatic cassette or manual feed
Cassettes	A4, B5, letter, legal, invoice, executive (including options)
Cassette capacity	250 sheets
Manual feed	Automatic bypass for transparency films, labels (130 g/m^2 maximum paper weight)
Delivery tray	Face down tray
	Face up tray
Photoconductor	OPC (organic photoconductive drum)
Developing system	Dry, two-component, magnetic brush type
Fusing system	Heat roller type
Print color	Black
Replacement toner	Sealed cartridge
Warm-up time	60 seconds maximum at 25°C
Interface	Centronics parallel
	RS-232C serial
Emulation	HP LaserJet Series II, Epson FX-80, IBM Proprinter, IBM Graphics Printer, Diablo 630/630 ECS
Resident font	Courier (portrait and landscape); condensed, elite, enlarge, bold, script, italic for dot printer emulation.
	Courier, courier bold and line printer (portrait and landscape) for HP Laser-Jet Series II emulation.
Optional font	Two-slot plug-in credit card sized cards for HP LaserJet Series II and Diablo 630/630 ECS
Power source	Rated local AC voltage ±10%
Power consumption	650 W during warm up
Dimensions	340(W) × 360(D) × 267(H) mm
	13-25/64″(W) × 14-3/16″(D) × 10-33/64″(H)
Weight	15 kg (33.1 lbs.) approximately
Noise level	50 dB maximum (printing), 45 dB maximum (idle)
Operational	Temperature: 10°C~30°C (50°F~86°F)
conditions	Humidity: 20%~80%

As a part of policy of continuous improvement, SHARP reserves the right to make design and specification changes for product improvement without prior notice. The performance specification figures indicated are nominal values of production units. There may be some deviations from these values in individual units.

GENERAL INFORMATION

Options

JX-95SU	Second cassette unit (250 sheets) (not including cassette)
JX-95EF	Envelope feeder (40 sheets max.)
JX-95CC	Legal cassette (250 sheets)
JX-95BC	Letter cassette (250 sheets)
JX-95AC	Invoice cassette (250 sheets)
JX-95A4	A4 cassette (250 sheets)
JX-95B5	B5 cassette (250 sheets)
JX-95GC	Executive cassette (250 sheets)
JX-95MB (JX-97MB)	Expansion memory (1.0 MB)
JX-95MC (JX-97MC)	Expansion memory (1.5 MB)
JX-95ME (JX-97ME)	Expansion memory (2.5 MB)
JX-95MH (JX-97MH)	Expansion memory (4.0 MB)
JX-9C4A (JX-9C5A)	Font card HEWLETT PACKARD/LASERJET (B); (US ASCII symbol set) HELV Bold Prop Port. 14.4 TMS RMN Med Prop Port. 10 TMS RMN Bold Prop Port. 10 TMS RMN Med (It) Prop Port. 10 TMS RMN Light Prop Port. 8 (ROMAN 8 symbol set) Line Printer Light Land. 8.5
JX-9C4F (JX-9C5F)	Font card HEWLETT PACKARD/LASERJET (F); (ROMAN 8 US ASCII, ROMAN EXT) HELV Bold Prop Port. 14.4 TMS RMN Med Prop Port. 10 TMS RMN Bold Prop Port. 10 TMS RMN Med (It) Prop Port. 10 TMS RMN Med Prop Port. 8 Line Printer Med Port. 8.5
JX-9C4M (JX-9C5M)	Font card HEWLETT PACKARD/LASERJET (M); (ROMAN 8) PRESTIGE ELITE Med P&L 10 PRESTIGE ELITE Bold P&L 10 PRESTIGE ELITE Med (It) P&L 10

JX-9C4L (JX-9C5L)	Font card HEWLETT PACKARD/LASERJET (L); (ROMAN 8 SYMBOL SET) COURIER Bold P&L 12 COURIER Med (It) P&L 12 Line Printer Med P&L 8.5
JX-9C4N (JX-9C5N)	Font card HEWLETT PACKARD/LASERJET (N); (ROMAN 8 SYMBOL SET) LETTER GOTHIC Med P&L 12 LETTER GOTHIC Bold P&L 12 LETTER GOTHIC Med (It) P&L 12
JX-9C4P (JX-9C5P)	Font card HEWLETT PACKARD/LASERJET (P); (ROMAN 8 SYMBOL SET) TMS RMN Med Prop P&L 10 TMS RMN Bold Prop P&L 10 TMS RMN Med (It) Prop P&L 10
JX-9C5J	Font card HEWLETT PACKARD/LASERJET (J); (ROMAN 8, US ASCII, ROMAN EXT, MATH 8, MATH 8A, MATH 8B, MATH 7, PI FONT, PI FONT A) PRESTIGE ELITE Med Fixed Port. 7 PRESTIGE ELITE Med Fixed Port. 10 PRESTIGE ELITE Bold Fixed Port. 10 PRESTIGE ELITE (It) Fixed Port. 10
JX-9C5UV	Font card HEWLETT PACKARD/LASERJET (UV); (ROMAN 8, ROMAN EXT, LINE DRAW) HELV Med Prop P&L 6 HELV Med Prop P&L 8 HELV Bold Prop P&L 10 HELV Bold Prop P&L 12 HELV Bold Prop P&L 14 LETTER GOTHIC Med Fixed P&L 9.5 LINE DRAW Med Fixed P&L 12
JX-9C5Z	Font card HEWLETT PACKARD/LASERJET (Z); (ROMAN 8, US ASCII, ECMA 94 (Latin 1)) HELV Med Prop Port. 8 HELV Med Prop Port. 10 HELV Bold Prop Port. 10 HELV (It) Prop Port. 10 HELV Med Prop Port. 12 HELV Bold Prop Port. 12 HELV (It) Prop Port. 12 HELV Bold Prop Port. 14 TMS RMN Med Prop Port. 8 TMS RMN Med Prop Port. 10

	TMS RMN Bold Prop Port. 10
	TMS RMN (It) Prop Port. 10
	TMS RMN Med Prop Port. 12
	TMS RMN Bold Prop Port. 12
	TMS RMN (It) Prop Port. 12
	TMS RMN Bold Prop Port. 14
	LINE PRINTER Med Fixed P&L 8.5
JX-9C1A	Font card
(JX-9C1B)	DIABLO 630; Prestige Elite 12, Letter Gothic 12, Bold Proportional, Pica 10
JX-9C3A	Font card
(JX-9C3B)	DIABLO 630 ECS; Teletex-Pica 10, Scientific-Pica 10

Supplies

JX-95DR   Photoconductor cartridge, ozone filter
JX-95DC (other than Canada)/JX-95ND (Canada)
           Developer cartridge
JX-95TC (other than Canada)/JX-95NT (Canada)
           Toner kit (toner cartridge, toner collecting container, roller cleaner)

GENERAL
INFORMATION

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APPENDIX

INTERFACE HARDWARE
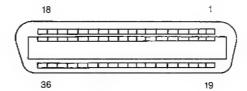
The Laser Printer is equipped with two interfaces:
1) Centronics parallel
2) RS-232C serial

This section provides information on the type of connector, pin configuration, pin signals and signal timing charts.

CENTRONICS PARALLEL

Connector

Female 36-pin DDK 57LE-40360-730B (D29) or equivalent.

Pin Configuration

The pin numbers and signal names are given in the table below.

PIN#	SIGNAL NAME	PIN#	SIGNAL NAME	PIN#	SIGNAL NAME
1	STB	13	SLCT	25	DATA 6 RET
2	DATA 1	14	AUTO LF	26	DATA 7 RET
3	DATA 2	15	(NC)	27	DATA 8 RET
4	DATA 3	16	GND (0V)	28	ACKNLG RET
5	DATA 4	17	FG (Protective Ground)	29	BUSY RET
6	DATA 5	18	(NC)	30	PE RET
7	DATA 6	19	STB RET	31	INPRM
8	DATA 7	20	DATA 1 RET	32	FAULT
9	DATA 8	21	DATA 2 RET	33	GND
10	ACKNLG	22	DATA 3 RET	34	(NC)
11	BUSY	23	DATA 4 RET	35	+5V
12	PE (Paper End)	24	DATA 5 RET	36	SLCT IN

Signal Descriptions

Pin 1 ($\overline{\text{STB}}$, printer input):
Low when data to be sent to the printer is valid.

Pins 2-9 (DATA 1 to DATA 8, printer input):
High pulse for logic 1 data.

Pin 10 ($\overline{\text{ACKNLG}}$, printer output):
Low pulse acknowledges data received and processed, computer can send next data.

Pin 11 (BUSY, printer output):
High signal when printer is busy and cannot receive data, low signal when printer is ready to receive data.

Pin 12 (PE, printer output):
High signal indicates paper out.

Pin 13 (SLCT, printer output):
High signal indicates printer is ready and on-line.

Pin 14 ($\overline{\text{AUTO LF}}$, printer input):
Used only for FX-80 emulation. When low and FIX AUTO LF is on, the printer executes a line feed after each carriage return code received.

Pin 31 ($\overline{\text{INPRM}}$, printer input):
Low signal that initializes the printer to the power-on state. Ignored in the HP LaserJet series II emulation.

Pin 32 ($\overline{\text{FAULT}}$, printer output):
Low signal indicates printer error.

Pin 35 (+5 V, printer output):
Printer power on signal, pulled up by a resistor to +5 V.

Pin 36 ($\overline{\text{SLCT IN}}$, printer input):
Used only for FX-80 emulation. When high, fixed select is off, and DC1 and DC3 are available to select and deselect the printer. When low, fixed select is on, and the printer is selected; DC1 and DC3 are ignored. (See page 51.)

MS-DOS/PC-DOS Command

The MS-DOS or PC-DOS command that sets up your computer for communication through its parallel interface is:
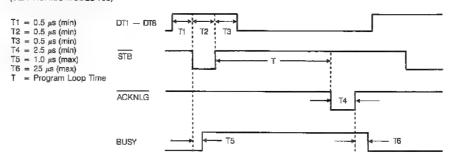
MODE LPT1:,,P

If the LPT port connected to your printer is not LPT1, you need to use the correct LPT port number in the above MODE statements.
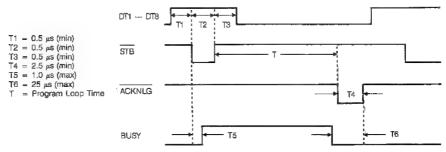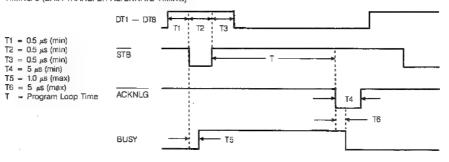
Signal Timing Chart

TIMING 1 (DATA TRANSFER STANDARD TIMING)
(CENTRONICS MODEL 703)

T1 = 0.5 μs (min)
T2 = 0.5 μs (min)
T3 = 0.5 μs (min)
T4 = 2.5 μs (min)
T5 = 1.0 μs (max)
T6 = 25 μs (max)
T = Program Loop Time

DT1 — DT8   T1 T2 T3

$\overline{STB}$ T

$\overline{ACKNLG}$ T4

BUSY   T5   T6

TIMING 2 (DATA TRANSFER ALTERNATE TIMING)

DT1 — DT8   T1 T2 T3

T1 = 0.5 μs (min)
T2 = 0.5 μs (min)
T3 = 0.5 μs (min)
T4 = 2.5 μs (min)
T5 = 1.0 μs (max)
T6 = 25 μs (max)
T = Program Loop Time

$\overline{STB}$ T

$\overline{ACKNLG}$ T4

BUSY   T5   T6
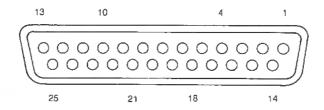
TIMING 3 (DATA TRANSFER ALTERNATE TIMING)

DT1 — DT8   T1 T2 T3

T1 = 0.5 μs (min)
T2 = 0.5 μs (min)
T3 = 0.5 μs (min)
T4 = 5 μs (min)
T5 = 1.0 μs (max)
T6 = 5 μs (max)
T = Program Loop Time

$\overline{STB}$ T

$\overline{ACKNLG}$ T4   T6

BUSY   T5

Connector

Female 25-pin DDK 17LE-13250-28 (D4CK) or equivalent.

Pin Configuration

The pin numbers and signal names are given in the table below.

PIN	SIGNAL NAME	SOURCE
1	FG (Frame Ground)	...
2	TXD (Transmitted Data)	PRINTER
3	RXD (Received Data)	HOST
4	RTS (Request to Send)	PRINTER
6	DSR (Data Set Ready)	HOST
7	GND (Signal Ground)	...
20	DTR (Data Terminal Ready)	PRINTER

Signal Descriptions

Pin 2 (TXD, printer output):
Data from the printer to computer.
Pin 3 (RXD, printer input):
Data from the computer to printer.
Pin 4 (RTS, printer output):
High signal sent to the computer before the printer transmits.
This signal is high when the printer power is on.
Pin 6 (DSR, printer input):
High signal indicates the computer is ready.
This signal is not required to receive data.
Pin 20 (DTR, printer output):
High signal indicates the printer is ready and low signal indicates the printer is busy.

Data Format

Start bit   1
Data bits   8*
Stop bit   1
Parity   None*

*The status of these items can be changed.

MS-DOS/PC-DOS MODE Commands

The first of the MS-DOS and PC-DOS MODE commands listed below sets up your computer's serial interface to match the printer's default serial configuration choices. The second MODE command sets up your computer for communication through its serial interface.

MODE COM1:9600,N,8,1,P

MODE LPT1:=COM1

If the COM port connected to your printer is not COM1, you need to use the correct COM port number in the above MODE statements.

RESIDENT FONTS

The Resident Fonts built into your Laser Printer are different in each of the emulations. See the list and samples below and the character set printouts in the programming section.

HP LaserJet series II

● Courier   12 point 10 cpi   ROMAN-8 PORT/LAND

```
                         !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklmnopqrstuvwxyz{|}~※
                       ÀÂÈÊËÎÏ´`^"˜ÛÙ£¯Ýý°ÇçÑñ¡¿¤£¥§ƒ¢
âêôûáéóúàèòùäëöüÅîØÆåíøæÄìÖÜÉïßÔÁÃãÐðíìóòõÕšŠÚŸÿÞþ·µ¶¾¬½¼ªº«■»±
```

● Courier   12 point 10 cpi   IBM-US   PORT/LAND

```
 ☺☻♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~⌂
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▒▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Courier   12 point 10 cpi   IBM-D/N   PORT/LAND

```
 ☺☻♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~⌂
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø×ƒáíóúñÑõÕ¿ãÃ£ñ¡³¤▒▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Courier   12 point 10 cpi   ECMA-94 PORT/LAND

```
                         !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~※
                       ¡¢£¤¥¦§¨©ª«¬®¯°±²³´µ¶·¸¹º»¼½¾¿
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþÿ
```

● Courier   12 point 10 cpi BOLD ROMAN-8 PORT/LAND

```
                         !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklmnopqrstuvwxyz{|}~※
                       ÀÂÈÊËÎÏ´`^"˜ÛÙ£¯Ýý°ÇçÑñ¡¿¤£¥§ƒ¢
âêôûáéóúàèòùäëöüÅîØÆåíøæÄìÖÜÉïßÔÁÃãÐðíìóòõÕšŠÚŸÿÞþ·µ¶¾¬½¼ªº«■»±
```

● Courier 12 point 10 cpi BOLD IBM-US PORT/LAND

```
☺☻♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~▓
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓░▒│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Courier 12 point 10 cpi BOLD IBM-D/N PORT/LAND

```
☺☻♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~▓
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø×ƒáíóúñÑõõ¿ãÃℓñ¡³¤▒░│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Courier 12 point 10 cpi BOLD ECMA-94 PORT/LAND

```
                                   !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~▓
                  ¡¢£¤¥¦§¨©ª«¬®¯°±²³´µ¶·¸¹º»¼½¾¿
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþÿ
```

● Line Printer 8.5 point 16.66 cpi ROMAN-8 PORT/LAND

```
                !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~▓
              ÀÂÈÊËÎÏ´`ˆ¨˜ÙÛ£¯Ýý°ÇçÑñ¡¿¤£¥§ƒ¢
âêôûáéóúàèòùäëöüÅîØÆåíøæÄìÖÜÉïßÔÁÃãÐðÍÌÓÒÕõŠšÚŸÿÞþ·µ¶¾—¼½ªº«»±
```

● Line Printer 8.5 point 16.66 cpi IBM-US PORT/LAND

```
☺☻♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~▓
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓░▒│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Line Printer 8.5 point 16.66 cpi IBM-D/N PORT/LAND

```
☺☻♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~▓
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø×ƒáíóúñÑõõ¿ãÃℓñ¡³¤▒░│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Line Printer 8.5 point 16.66 cpi ECMA-94 PORT/LAND

```
                !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~▓
              ¡¢£¤¥¦§¨©ª«¬®¯°±²³´µ¶·¸¹º»¼½¾¿
ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþÿ
```

Epson FX-80

● Courier   12 point 10 cpi USASCII+ITALIC PORT/LAND

```
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

● Courier Script   6 point 10 cpi USASCII+ITALIC PORT/LAND

```
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

● Elite   12 point 12 cpi USASCII+ITALIC PORT/LAND

```
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

● Elite Script   6 point 12 cpi USASCII+ITALIC PORT/LAND

```
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

● Condense   12 point 17.6 cpi USASCII+ITALIC PORT/LAND

```
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

● Condense Script 6 point 17.6 cpi USASCII+ITALIC PORT/LAND

```
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
                              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

IBM Proprinter

● Courier   12 point 10 cpi USASCII+IBM CHR. PORT/LAND

```
  ♥♦♣♠                    ¶§         →←     Ø !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓▓▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Courier Script   6 point 10 cpi USASCII+IBM CHR. PORT/LAND

```
  ♥♦♣♠                    ¶§         →←     Ø !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓▓▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Elite   12 point 12 cpi USASCII+IBM CHR. PORT/LAND

```
  ♥♦♣♠                    ¶§         →←     Ø !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓▓▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Elite Script   6 point 12 cpi USASCII+IBM CHR. PORT/LAND

```
  ♥♦♣♠                    ¶§         →←     Ø !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓▓▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Condense   12 point 17.6 cpi USASCII+IBM CHR. PORT/LAND

```
  ♥♦♣♠          ¶§     →←   Ø !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓▓▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Condense Script   6 point 17.6 cpi USASCII+IBM CHR. PORT/LAND

```
  ♥♦♣♠          ¶§     →←   Ø !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓▓▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

IBM Graphics Printer

● Courier   12 point 10 cpi USASCII+IBM CHR. PORT/LAND

```
♥♦♣♠                        §              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Courier Script   6 point 10 cpi USASCII+IBM CHR. PORT/LAND

```
♥♦♣♠                        §              !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Condense   12 point 17.6 cpi USASCII+IBM CHR. PORT/LAND

```
♥♦♣♠              §         !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

● Condense Script   6 point 17.6 cpi USASCII+IBM CHR. PORT/LAND

```
♥♦♣♠              §         !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αßΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

Diablo 630/630ECS

● Courier   12 point 10 cpi USASCII PORT/LAND

```
                            !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
```

Hex Dump

● Courier   12 point 10 cpi USASCII+SPECIAL CHR. PORT

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HI / LO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p				⁻	â	Å	Á	Þ
1			!	1	A	Q	a	q			À	Ý	ê	î	Ã	þ
2			"	2	B	R	b	r			Â	ý	ô	Ø	ã	·
3			#	3	C	S	c	s			È	°	û	Æ	Ð	µ
4			$	4	D	T	d	t			Ê	Ç	á	å	ð	¶
5			%	5	E	U	e	u			Ë	ç	é	í	Í	¾
6			&	6	F	V	f	v			Î	Ñ	ó	ø	Ì	—
7			'	7	G	W	g	w			Ï	ñ	ú	æ	Ó	¼
8			(	8	H	X	h	x			´	¡	à	Ä	Ò	½
9			)	9	I	Y	i	y			`	¿	è	ì	Õ	ª
A			*	:	J	Z	j	z			^	¤	ò	Ö	õ	º
B			+	;	K	[	k	{			¨	£	ù	Ü	Š	«
C			,	<	L	\	l	|			~	¥	ä	É	š	■
D			-	=	M	]	m	}			Ù	§	ë	Ï	Ú	»
E			.	>	N	^	n	~			Û	ƒ	ö	ß	Ÿ	±
F			/	?	O	_	o	※			£	¢	ü	ô	ÿ	

LOWER 4 BIT

▱ ISO Symbol Sets

ISO Symbol Sets

ISO	NAME	ID	DECIMAL CHARACTER EQUIVALENTS											
			23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
6	ASCII	0U	#	$	@	[	\	]	^	`	{	|	}	~
2	ISO IRV	2U	#	¤	@	[	\	]	^	`	{	|	}	‾
4	ISO United Kingdom	1E	£	$	@	[	\	]	^	`	{	|	}	‾
25	ISO French	0F	£	$	à	°	ç	§	^	`	é	ù	è	¨
69	ISO French	1F	£	$	à	°	ç	§	^	µ	é	ù	è	¨
	German	0G	£	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
21	ISO German	1G	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
15	ISO Italian	0I	£	$	§	°	ç	é	^	ù	à	ò	è	ì
14	JIS ASCII	0K	#	$	@	[	¥	]	^	`	{	|	}	‾
57	ISO Chinese	2K	#	¥	@	[	\	]	^	`	{	|	}	‾
10	ISO Swedish	3S	#	¤	@	Ä	Ö	Å	^	`	ä	ö	å	‾
11	ISO Swedish	0S	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
	Spanish	1S	#	$	@	¡	Ñ	¿	°	`	{	ñ	}	~
17	ISO Spanish	2S	£	$	§	¡	Ñ	¿	^	`	°	ñ	ç	~
85	ISO Spanish	6S	#	$	·	¡	Ñ	Ç	¿	`	´	ñ	ç	¨
16	ISO Portuguese	4S	#	$	§	Ã	Ç	Õ	^	`	ã	ç	õ	°
84	ISO Portuguese	5S	#	$	´	Ã	Ç	Õ	^	`	ã	ç	õ	~
60	ISO Norwegian v1	0D	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	‾
61	ISO Norwegian v2	1D	§	$	@	Æ	Ø	Å	^	`	æ	ø	å	|

114

Courier 12 point 10 cpi IBM-US

UPPER 4 BIT

HI / LO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		▶		0	@	P	`	p	Ç	É	á	▓	└	⊥	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	▒	⊥	┰	β	±
2	●	↕	"	2	B	R	b	r	é	Æ	ó	▓	┰	┰	Γ	≥
3	♥	‼	#	3	C	S	c	s	â	ô	ú	│	├	└	π	≤
4	♦	¶	$	4	D	T	d	t	ä	ö	ñ	┤	─	└	Σ	⌐
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
6	♠	▬	&	6	F	V	f	v	å	û	ª	╢	╞	╓	μ	÷
7	•	↨	'	7	G	W	g	w	ç	ù	º	╖	╫	╫	τ	≈
8	◘	↑	(	8	H	X	h	x	ê	ÿ	¿	╕	╙	╪	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	⌐	╣	╘	┘	Θ	∙
A	◙	→	*	:	J	Z	j	z	è	Ü	¬	║	⊥	┌	Ω	·
B	♂	←	+	;	K	[	k	{	ï	¢	½	╗	┰	█	δ	√
C	♀	∟	,	<	L	\	l	|	î	£	¼	╝	╞	■	∞	η
D	♪	↔	-	=	M	]	m	}	ì	¥	¡	╜	═	▌	φ	²
E	♫	▲	.	>	N	^	n	~	Ä	₧	«	╛	┼	▐	ε	■
F	☼	▼	/	?	O	_	o	▓	Å	ƒ	»	┐	⊥	■	∩	

LOWER 4 BIT

115

HP LaserJet series II

Courier 12 point 10cpi IBM-D/N

UPPER 4 BIT

HI / LO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		►		0	@	P	`	p	Ç	É	á	▒	└	⊥	α	≡
1	☺	◄	!	1	A	Q	a	q	ü	æ	í	▒	┴	┬	ß	±
2	●	↕	"	2	B	R	b	r	é	Æ	ó	▓	┬	┬	Γ	≥
3	♥	‼	#	3	C	S	c	s	â	ô	ú	│	├	└	π	≤
4	♦	¶	$	4	D	T	d	t	ä	ö	ñ	┤	─	└	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	┌	σ	⌡
6	♠	▬	&	6	F	V	f	v	å	û	õ	╢	╞	┌	μ	÷
7	•	↕	'	7	G	W	g	w	ç	ù	õ	╖	╟	╫	τ	≈
8	◘	↑	(	8	H	X	h	x	ê	ÿ	¿	╕	└	╪	Φ	°
9	○	↓	)	9	I	Y	i	y	ë	Ö	ã	╣	╔	┘	Θ	•
A	◙	→	*	:	J	Z	j	z	è	Ü	Ā	║	╩	┌	Ω	·
B	♂	←	+	;	K	[	k	{	ï	ø	ℓ	╗	╦	■	δ	√
C	♀	∟	,	<	L	\	l	|	î	£	ñ	╝	╠	■	∞	η
D	♪	↔	-	=	M	]	m	}	ì	Ø	¡	╜	═	▌	φ	²
E	♫	▲	.	>	N	^	n	~	Ä	L	³	╛	╬	▐	ε	■
F	☼	▼	/	?	O	_	o	▓	Å	l·	¤	┐	⊥	■	∩	

HP LaserJet series II

Courier 12 point 10 cpi ECMA-94

UPPER 4 BIT

HI / LO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p				°	À	Ð	à	ð
1			!	1	A	Q	a	q			¡	±	Á	Ñ	á	ñ
2			"	2	B	R	b	r			¢	²	Â	Ò	â	ò
3			#	3	C	S	c	s			£	³	Ã	Ó	ã	ó
4			$	4	D	T	d	t			¤	´	Ä	Ô	ä	ô
5			%	5	E	U	e	u			¥	µ	Å	Õ	å	õ
6			&	6	F	V	f	v			¦	¶	Æ	Ö	æ	ö
7			'	7	G	W	g	w			§	·	Ç	×	ç	÷
8			(	8	H	X	h	x			¨	¸	È	Ø	è	ø
9			)	9	I	Y	i	y			°	¹	É	Ù	é	ù
A			*	:	J	Z	j	z			ª	º	Ê	Ú	ê	ú
B			+	;	K	[	k	{			«	»	Ë	Û	ë	û
C			,	<	L	\	l	|			¬	¼	Ì	Ü	ì	ü
D			−	=	M	]	m	}			–	½	Í	Ý	í	ý
E			.	>	N	^	n	~			®	¾	Î	Þ	î	þ
F			/	?	O	_	o	▓			¯	¿	Ï	ß	ï	ÿ

LOWER 4 BIT

117

Epson FX-80

Courier 12 point 10 cpi USASCII+ITALIC

UPPER 4 BIT

HI / LO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	à	§		0	@	P	`	p	à	§		0	@	P	`	p
1	è	ß	!	1	A	Q	a	q	è	ß	!	1	A	Q	a	q
2	ù	Æ	"	2	B	R	b	r	ù	Æ	"	2	B	R	b	r
3	ò	æ	#	3	C	S	c	s	ò	æ	#	3	C	S	c	s
4	ì	Ø	$	4	D	T	d	t	ì	Ø	$	4	D	T	d	t
5	°	ø	%	5	E	U	e	u	°	ø	%	5	E	U	e	u
6	£	¨	&	6	F	V	f	v	£	¨	&	6	F	V	f	v
7	¡	Ä	'	7	G	W	g	w	¡	Ä	'	7	G	W	g	w
8	¿	Ö	(	8	H	X	h	x	¿	Ö	(	8	H	X	h	x
9	Ñ	Ü	)	9	I	Y	i	y	Ñ	Ü	)	9	I	Y	i	y
A	ñ	ä	*	:	J	Z	j	z	ñ	ä	*	:	J	Z	j	z
B	¤	ö	+	;	K	[	k	{	¤	ö	+	;	K	[	k	{
C	₧	ü	,	<	L	\	l	|	₧	ü	,	<	L	\	l	/
D	Å	É	−	=	M	]	m	}	Å	É	−	=	M	]	m	}
E	å	é	.	>	N	^	n	~	å	é	.	>	N	^	n	~
F	ç	¥	/	?	O	_	o		ç	¥	/	?	O	_	o	

LOWER 4 BIT

☐ National Character

118

	A3 23	A4 24	C0 40	DB 5B	DC 5C	DD 5D	DE 5E	E0 60	FB 7B	FC 7C	FD 7D	FE 7E
USA	#	$	@	[	\	]	^	`	{	|	}	~
FRANCE	#	$	à	°	ç	§	^	`	é	ù	è	¨
GERMANY	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
ENGLAND	£	$	@	[	\	]	^	`	{	|	}	~
DENMARK 1	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ITALY	#	$	@	°	\	é	^	ù	à	ò	è	ì
SPAIN	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
JAPAN	#	$	@	[	¥	]	^	`	{	|	}	~
NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
DENMARK 2	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü

National Character Table

119

Courier 12 point 10 cpi USASCII+IBM CHR.

UPPER 4 BIT

HI / LO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	▓	└	╨	α	≡
1			!	1	A	Q	a	q	ü	æ	í	▓	┴	╤	ß	±
2			"	2	B	R	b	r	é	Æ	ó	▓	┬	╥	Γ	≥
3	♥		#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
4	♦	¶	$	4	D	T	d	t	ä	ö	ñ	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	å	û	ª	╢	╞	╓	µ	÷
7		|	'	7	G	W	g	w	ç	ù	º	╖	╟	╫	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿	╕	╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Θ	·
A		→	*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B		←	+	;	K	[	k	{	ï	¢	½	╗	╦	█	δ	√
C			,	<	L	\	l	|	î	£	¼	╝	╠	▄	∞	ⁿ
D			-	=	M	]	m	}	ì	¥	¡	╜	═	█	φ	²
E			.	>	N	^	n	~	Ä	₧	«	╛	╬	█	ε	■
F		ø	/	?	O	_	o		Å	ƒ	»	┐	╧	▀	∩	

▭ National Character

	30	9B	9D	9E	9F	A6	A7	A9	AA	AB	AC	AE	AF
International	0	¢	¥	₧	ƒ	ª	º	⌐	¬	½	¼	«	»
Norway/Denmark	0	ø	Ø	Ŀ	ŀ	ō	Õ	ã	Ã	ℓ	ń	³	¤

National Character Table

120

IBM Graphics Printer

Courier 12 point 10 cpi USASCII+IBM CHR.

UPPER 4 BIT

HI / LO	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	▒	└	┴	α	≡
1			!	1	A	Q	a	q	ü	æ	í	▓	┴	┬	ß	±
2			"	2	B	R	b	r	é	Æ	ó	█	┬	┬	Γ	≥
3	♥		#	3	C	S	c	s	â	ô	ú	│	├	└	π	≤
4	♦		$	4	D	T	d	t	ä	ö	ñ	┤	─	└	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	┤	┼	┌	σ	⌡
6	♠		&	6	F	V	f	v	å	û	ª	┤	├	┌	µ	÷
7			'	7	G	W	g	w	ç	ù	º	┐	├	┼	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿	┐	└	┼	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	┤	┌	┘	Θ	∙
A			*	:	J	Z	j	z	è	Ü	¬	│	┴	┌	Ω	·
B			+	;	K	[	k	{	ï	¢	½	┐	┬	■	δ	√
C			,	<	L	\	l	|	î	£	¼	┘	├	■	∞	ⁿ
D			-	=	M	]	m	}	ì	¥	¡	┘	─	█	φ	²
E			.	>	N	^	n	~	Ä	₧	«	┘	┼	█	ε	∎
F			/	?	O	_	o		Å	ƒ	»	┐	┴	■	∩	

LOWER 4 BIT

▱ National Character

	30	9B	9D	9E	9F	A6	A7	A9	AA	AB	AC	AE	AF
International	0	¢	¥	₧	ƒ	ª	º	⌐	¬	½	¼	«	»
Norway/Denmark	0	ø	Ø	Ŀ	ŀ	õ	Õ	ã	Ã	ℓ	ń	³	¤

National Character Table

121

Diablo 630/630 ECS

Courier 12 point 10 cpi USASCII

UPPER 4 BIT

HI / LO	0	1	2	3	4	5	6	7
0			¢	0	@	P	`	p
1			!	1	A	Q	a	q
2			"	2	B	R	b	r
3			#	3	C	S	c	s
4			$	4	D	T	d	t
5			%	5	E	U	e	u
6			&	6	F	V	f	v
7			'	7	G	W	g	w
8			(	8	H	X	h	x
9			)	9	I	Y	i	y
A			*	:	J	Z	j	z
B			+	;	K	[	k	{
C			,	<	L	\	l	|
D			-	=	M	]	m	}
E			.	>	N	^	n	~
F			/	?	O	_	o	¬

▱ National Character

	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
USA	#	$	@	[	\	]	^	`	{	|	}	‾
FRANCE	#	$	à	°	ç	§	^	`	é	ù	è	¨
GERMANY	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
ENGLAND	£	$	@	[	\	]	^	`	{	|	}	‾
DENMARK 1	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	‾
SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ITALY	#	$	@	°	\	é	^	ù	à	ò	è	ì
SPAIN	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
JAPAN	#	$	@	[	¥	]	^	`	{	|	}	~
NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
DENMARK 2	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü

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Hex Dump

Courier 12 point 10 cpi USASCII+SPECIAL CHR.

```
Page 1
1B 45 1B 26 6C 4C 1B 26 6C 36 36 50 1B 26 6C 4F    ▮E▮&IL▮&l66P▮&lO
1B 28 30 55 1B 28 73 31 70 31 30 76 73 42 1B 26    ▮(0U▮(s1p10vsB▮&
6C 36 44 1B 26 61 2D 33 36 30 56 0A 0A 0A 0A 0D    l6D▮&a-360V▮▮▮▮▮
1B 26 61 2B 31 32 39 32 48 1B 28 30 55 1B 28 73    ▮&a+1292H▮(0U▮(s
31 70 31 30 76 73 37 42 53 4F 46 54 2F 50 52 49    1p10vs7BSOFT/PRI
4E 54 1B 26 61 2B 34 31 48 53 45 52 56 49 43 45    NT▮&a+41HSERVICE
1B 26 61 2B 34 31 48 44 45 53 43 52 49 50 54 49    ▮&a+41HDESCRIPTI
4F 4E 1B 26 6C 4F 1B 28 30 55 1B 28 73 31 70 31    ON▮&lO▮(0U▮(s1p1
30 76 73 42 0A 0A 0A 0D 1B 26 61 2B 35 35 30 48    0vsB▮▮▮▮▮&a+550H
1B 28 30 55 1B 28 73 31 70 31 30 76 73 37 42 1B    ▮(0U▮(s1p10vs7B▮
26 64 44 46 45 41 54 55 52 45 53 1B 26 6C 4F 1B    &dDFEATURES▮&lO▮
28 30 55 1B 28 73 31 70 31 30 76 73 42 1B 26 64    (0U▮(s1p10vsB▮&d
40 0A 0D 1B 26 61 2B 35 35 30 48 53 6F 66 74 2F    @▮▮▮&a+550HSoft/
50 72 69 6E 74 1B 26 61 2B 34 31 48 69 73 1B 26    Print▮&a+41His▮&
61 2B 34 31 48 61 1B 26 61 2B 34 31 48 63 6F 6C    a+41Ha▮&a+41Hcol
6C 65 63 74 69 6F 6E 1B 26 61 2B 34 31 48 6F 66    lection▮&a+41Hof
1B 26 61 2B 34 31 48 61 6E 6E 75 61 6C 1B 26 61    ▮&a+41Hannual▮&a
2B 34 31 48 73 75 62 73 63 72 69 70 74 69 6F 6E    +41Hsubscription
1B 26 61 2B 34 31 48 73 65 72 76 69 63 65 73 2C    ▮&a+41Hservices,
1B 26 61 2B 34 31 48 64 65 73 69 67 6E 65 64 0A    ▮&a+41Hdesigned▮
0D 1B 26 61 2B 35 35 30 48 74 6F 1B 26 61 2B 34    ▮▮&a+550Hto▮&a+4
31 48 61 73 73 69 73 74 1B 26 61 2B 34 31 48 70    1Hassist▮&a+41Hp
72 69 6E 74 65 72 1B 26 61 2B 34 31 48 63 6F 6D    rinter▮&a+41Hcom
70 61 6E 69 65 73 1B 26 61 2B 34 31 48 69 6E 1B    panies▮&a+41Hin▮
26 61 2B 34 31 48 61 63 68 69 65 76 69 6E 67 1B    &a+41Hachieving▮
26 61 2B 34 31 48 61 6E 64 1B 26 61 2B 34 31 48    &a+41Hand▮&a+41H
6D 61 69 6E 74 61 69 6E 69 6E 67 0A 0D 1B 26 61    maintaining▮▮▮&a
2B 35 35 30 48 63 6F 6D 70 61 74 69 62 69 6C 69    +550Hcompatibili
74 79 1B 26 61 2B 34 30 48 77 69 74 68 1B 26 61    ty▮&a+40Hwith▮&a
2B 34 30 48 74 6F 70 2D 73 65 6C 6C 69 6E 67 1B    +40Htop-selling▮
26 61 2B 34 30 48 73 6F 66 74 77 61 72 65 2E 1B    &a+40Hsoftware.▮
26 61 2B 34 30 48 1B 26 61 2B 34 30 48 54 68 65    &a+40H▮&a+40HThe
1B 26 61 2B 34 30 48 73 65 72 76 69 63 65 1B 26    ▮&a+40Hservice▮&
61 2B 34 30 48 69 6E 63 6C 75 64 65 73 1B 26 61    a+40Hincludes▮&a
2B 34 30 48 74 65 73 74 0A 0D 1B 26 61 2B 35 35    +40Htest▮▮▮&a+55
30 48 73 6F 66 74 77 61 72 65 1B 26 61 2B 34 31    0Hsoftware▮&a+41
48 61 6E 64 1B 26 61 2B 34 31 48 6B 65 79 1B 26    Hand▮&a+41Hkey▮&
61 2B 34 31 48 69 6E 66 6F 72 6D 61 74 69 6F 6E    a+41Hinformation
1B 26 61 2B 34 31 48 72 65 6C 61 74 69 6E 67 1B    ▮&a+41Hrelating▮
26 61 2B 34 31 48 68 6F 77 1B 26 61 2B 34 31 48    &a+41Hhow▮&a+41H
74 68 65 1B 26 61 2B 34 31 48 6C 65 61 64 69 6E    the▮&a+41Hleadin
67 1B 26 61 2B 34 31 48 49 42 4D 2D 50 43 0A 0D    g▮&a+41HIBM-PC▮▮
1B 26 61 2B 35 35 30 48 63 6F 6D 70 61 74 69 62    ▮&a+550Hcompatib
6C 65 1B 26 61 2B 34 31 48 73 6F 66 74 77 61 72    le▮&a+41Hsoftwar
65 1B 26 61 2B 34 31 48 70 72 6F 64 75 63 74 73    e▮&a+41Hproducts
1B 26 61 2B 34 31 48 73 75 70 70 6F 72 74 1B 26    ▮&a+41Hsupport▮&
61 2B 34 31 48 76 61 72 69 6F 75 73 1B 26 61 2B    a+41Hvarious▮&a+
34 31 48 70 72 69 6E 74 65 72 73 2E 1B 26 61 2B    41Hprinters.▮&a+
34 31 48 1B 26 61 2B 34 31 48 54 68 65 1B 26 61    41H▮&a+41HThe▮&a
2B 34 31 48 6B 65 79 0A 0D 1B 26 61 2B 35 35 30    +41Hkey▮▮&a+550
48 65 6C 65 6D 65 6E 74 73 1B 26 61 2B 34 31 48    Helements▮&a+41H
6F 66 1B 26 61 2B 34 31 48 74 68 65 1B 26 61 2B    of▮&a+41Hthe▮&a+
34 31 48 53 6F 66 74 2F 50 72 69 6E 74 1B 26 61    41HSoft/Print▮&a
2B 34 31 48 73 65 72 76 69 63 65 73 1B 26 61 2B    +41Hservices▮&a+
34 31 48 61 72 65 1B 26 61 2B 34 31 48 73 75 6D    41Hare▮&a+41Hsum
6D 61 72 69 7A 65 64 1B 26 61 2B 34 31 48 62 65    marized▮&a+41Hbe
6C 6F 77 3A 0A 0A 0D 1B 26 61 2B 35 35 30 48 1B    low:▮▮▮&a+550H▮
28 30 55 1B 28 73 31 70 31 30 76 73 37 42 1B 26    (0U▮(s1p10vs7B▮&
64 44 43 6F 6D 70 61 74 69 62 69 6C 69 74 79 1B    dDCompatibility▮
26 61 2B 34 31 48 54 65 73 74 1B 26 61 2B 34 31    &a+41HTest▮&a+41
48 46 69 6C 65 73 1B 26 6C 4F 1B 28 30 55 1B 28    HFiles▮&lO▮(0U▮(
73 31 70 31 30 76 73 42 1B 26 64 40 0A 0D 1B 26    s1p10vsB▮&d@▮▮▮&
61 2B 35 35 30 48 54 68 65 1B 26 61 2B 34 31 48    a+550HThe▮&a+41H
```

To allow the programmer to use HP LaserJet series II emulation with their Laser Printer, the following information on emulation commands is required.

Control Codes

Control Codes are commands to tell the printer how to process the data it receives. To determine the appropriate decimal and hexadecimal values for the codes, you should refer to the reference material provided with your computer or software.
The control codes are:

CODE: BS (Backspace)
FUNCTION: Moves the print position to the left a distance equal to the width of the last printed symbol or space. If the print position is already at the left margin, no action is taken.

CODE: LF (Line feed)
FUNCTION: Moves the print position to the next print line, maintain the current column position.

CODE: FF (Form feed)
FUNCTION: Moves the print position to the first line of the next page, maintain current column position.

CODE: CR (Carriage return)
FUNCTION: Moves the print position to the left margin of the current line.

CODE: SO (Shift Out)
FUNCTION: Selects the secondary font until SI is received.

CODE: SI (Shift In)
FUNCTION: Selects the primary font until SO is received.

CODE: ESC (Escape)
FUNCTION: Introduces sequence of characters to control the printer's programmable features.

CODE: HT (H TAB)
FUNCTION: Moves the print position to the next tab stop on the current line.
The tab stop are at left margin and at every eight columns to the right of the left margin.

CODE: SP (Space)
FUNCTION: Moves the print position one column to the right.

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Escape Sequences

This is a programmable command to tell the printer how to process data, it consists of a decimal or hexadecimal ESC control code followed by a specified character. Please refer to the reference material provided with your computer or software.

Job Control

Select special features of the printer:

SEQUENCE: ESC z   (Interface self-test)
FUNCTION: Instructs the printer to perform an interface self-test. When the printer receives ESC z, data processing stops, the current page is printed and then self-test is executed without data loss. If no error is detected the printer remains on-line and continues its work, if an error is detected the printer goes off-line.

SEQUENCE: ESC E   (Printer reset)
FUNCTION: Instructs the printer to complete printing any partial pages of data received before ESC E and then resets all programmable features to panel default values and deletes temporary fonts and macros. Following the reset, the printer remains on-line and continues to process data using the default values.

SEQUENCE: ESC &ℓ#X   (Number of copies)
FUNCTION: Selects the number of copies (# = 1 to 99) for each page to be printed. Can be inserted anywhere in a page.
Default = 1

The escape sequences control page orientation, page length, margins, line feed, perforation skip, etc.

SEQUENCE: ESC &ℓ#H   (Paper handling)
FUNCTION: Selects the paper handling method for the printer. Can be received inserted in the page, remains effective until another paper handling command is received by the printer or a paper handling command is changed by key input. The table below shows the available paper handling methods:

Paper input control
The value field (#) specifies the paper input method as shown in the following table:

#	Method	
0	eject page	
1 (default)	paper cassette	
2	manual feed	
3	envelope manual feed	
4	second cassette unit*	
6	envelope feeder*	*Only with option.

SEQUENCE: ESC &ℓ#A· (Page size)
FUNCTION: Selects the page size.
The table below shows the page size selection values:

Value (#)	Paper size
1	Executive (7.25″ × 10.5″)
2 (default)	Letter (8.5″ × 11″)
3	Legal (8.5″ × 14″)
24	Invoice (8-1/2″ × 5-1/2″)
26	A4 (210mm × 297mm)
31	B5 (182mm × 257mm)
32	AFSP (8″ × 10.5″)
	ENVELOPES:
80	Monarch 7-3/4 (3-7/8″ × 7-1/2″)
81	Commercial 10 (4-1/8″ × 9-1/2″)
90	International DL (110mm × 220mm)
91	International C5 (162mm × 229mm)

| SEQUENCE: | ESC &ℓ#P   (Specify page length) |
| FUNCTION: | Specifies the physical length of the paper being used as the number of lines (#). Portrait or landscape orientation does not affect the specification. If the orientation is changed, specify the page length first. The table below shows page length values: |

Portrait Orientation Page Length Settings

Page size	Lines-per-inch setting	
	6	8
Letter	66	88
Legal	84	112
A4	70	93
Executive	63	84

Landscape Orientation Page Length Settings

Page size	Lines-per-inch setting	
	6	8
Letter	51	68
Legal*	—*	—*
A4	49	66
Executive	43	58

*When printing on legal size paper with landscape orientation, set the page length while in portrait orientation (ESC & ℓ 84 P) and then specify landscape orientation (ESC & ℓ 1O). The lines per page setting is given by multiplying the lines per inch by the length of the page.

SEQUENCE:	ESC &ℓ#O (Select page orientation)
FUNCTION:	Selects either portrait (# = 0) or landscape (# = 1) page orientation. Portrait orientation prints from left to right across the page, while landscape prints along the length of the page. Portrait orientation (ESC &ℓ0O) is the power up state of the printer.
	Orientation command sets the page length, top margin, text length, left and right margins, HMI and VMI to their panel default values, and disables the auto overlay macro.

| SEQUENCE: | ESC &ℓ#E   (Specify top margin) |
| FUNCTION: | Specifies the top margin of the current page as the number of lines (#) to be skipped. Top margin values range from 0 to the page length (default is 1/2 inch from the top of the page). Avoid using a top margin value (#) of 0 or 1 because the top two lines are in the unprintable border region. If VMI is set to 0 or a top margin greater than the page length is specified, ESC &ℓ#E will be ignored. |

SEQUENCE: ESC &*l*#F   (Specify text length)
FUNCTION: Specifies the number of lines (#) of text to be printed on a page. If a text length
                value of 0 is specified, the text length is defaulted 1/2 inch from the bottom
                of the page. If the specified text length minus the bottom margin is greater
                than the page length, ESC &*l*#F will be ignored.

SEQUENCE: ESC &a#L   (Set left margin)
FUNCTION: Sets the left margin at a specified column number (#). A left margin value
                of 0 sets the margin to the leftmost print column (column 0). Column 0 is the
                default left margin. If the specified left margin exceeds the right margin, ESC
                &a#L is ignored.

SEQUENCE: ESC &a#M   (Set right margin)
FUNCTION: Sets the right margin at a specified column number (#). The rightmost print
                column is the default right margin. If the specified right margin is equal to or
                less than the left margin, ESC &a#M is ignored.

SEQUENCE: ESC 9   (Clear side margin settings)
FUNCTION: Clears the left and right margin settings set by ESC &a#L and ESC &a#M
                and returns the margins to the default values. ESC9 followed by CR (carrier
                return) also returns the cursor to the default left margin.

SEQUENCE: ESC &*l*#L   (Perforation skip mode)
FUNCTION: Enables (# = 1) or disables (# = 0) the perforation skip mode. If perforation
                skip is enabled (ESC &*l*1L), the printer stops printing at the bottom margin,
                and then continues printing from the top margin of the next page. When per-
                foration skip is disabled, the bottom margin is disabled.
                Default = enable

                Note: If you print in the perforation skip area and enter the unprintable border
                        region, data loss will result.

SEQUENCE: ESC &k#H   (Set horizontal motion index)
FUNCTION: Allows the pitch of a current fixed spacing font to be changed. The pitch value
                specifies the spacing of the individual characters (printed characters, space,
                and backspace) in 1/120 inch increments. If a proportional font is current, only
                the space character is affected by ESC & k#H. The HMI (horizontal motion
                index) setting is defaulted (erased) by switching between primary and secon-
                dary fonts and by specified font orientation, symbol set, pitch, spacing or height.
                The value may range from 0 to 840. The value field is valid to four decimal
                places. The table below shows examples of pitch values:

Value (#)	Pitch (cpi)
10	12
12	10

SEQUENCE: ESC &ℓ# C   (Set vertical motion index)

FUNCTION: Sets the vertical line spacing of printed text in 1/48th inch increments. The value range for # is 0 to 336 and can be specified to four decimal places. The table below shows examples of VMI values:

This command affects the line feed and half line feed spacing.

Value (#)	Line spacing
0 (min)	0 inch (overprint)
24	0.5 inch
48	1 inch
72	1.5 inches
96	2 inches
120	2.5 inches
336 (max)	7 inches

SEQUENCE: ESC &ℓ# D   (Set lines per inch)

FUNCTION: Set the vertical line spacing of the printed text in lines per inch. The power on state of the printer is 6 lines per inch. The lines per inch values are shown below:

Value (#):   1, 2, 3, 4, 6, 8, 12, 16, 24, and 48 (lines per inch)

Control cursor positioning for the printer:

SEQUENCE: ESC &a#C   (Horizontal cursor control — columns)
FUNCTION: For horizontal positioning of the cursor in increments of the current column pitch (characters per inch) within the print limits of the page. Column values exceeding the print limits of the page will position the cursor at the left or right limits of the current page. A + or − before the column value (#) moves the cursor relative to the current cursor position (+ to the right; − to the left). A column value without a + or − positions the cursor relative to the left margin (# = 0). The value field is valid to four decimal places. The table below shows examples of column values:

Value (#)	Current pitch (cpi)	Horizontal movement
0	any setting	current position
30	10	3 inches
36	12	3 inches

SEQUENCE: ESC &a#R   (Vertical cursor control — lines)
FUNCTION: For vertical positioning of the cursor in increments of the current line pitch (lines per inch) within the print limits of the page. Line values exceeding the print limits of the page will position the cursor at the top of the current page or cause a page eject if the bottom of the page is exceeded. A + or − before the column value (#) moves the cursor relative to the current cursor position (+ down; − up). A column value without a + or − positions the cursor relative to the top margin (# = 0) as a line margin. The value field is valid to four decimal places. The table below shows examples of line values:

Current value (#)	Lines per inch (lpi)	Vertical movement
0	any setting	current position
18	6	3 inches
24	8	3 inches

SEQUENCE: ESC *p#X   (Horizontal cursor control — dots)
FUNCTION: For horizontal positioning of the cursor in increments of dots (300 dpi) within the print limits of the page. A + or − before the dot value (#) moves the cursor relative to the current cursor position (+ to the right; − to the left). A dot value without a + or − positions the cursor relative to the left margin (# = 0). The table below shows examples of dot values:

Value (#)	Horizontal movement
0	current position
150	1/2 inch
900	3 inches

SEQUENCE:	ESC *p#Y (Vertical cursor control — dots)
FUNCTION:	For vertical positioning of the cursor in increments of dots (300 dpi) within the print limits of the page. A + or − before the dot value (#) moves the cursor relative to the current cursor position (+ down; − up). A dot value without a + or − positions the cursor relative to the top margin (# = 0). The previous table (ESC *p#X) shows examples of dot values.

SEQUENCE:	ESC &a#H (Horizontal cursor control — decipoints)
FUNCTION:	For horizontal positioning of the cursor in increments of decipoints (1/720 inch) within the print limits of the page. A + or − before the decipoint value (#) moves the cursor relative to the current cursor position (+ to the right; − to the left). A decipoint value without a + or − sign positions the cursor relative to the left margin (# = 0). The value field is valid to two decimal points. The table below shows examples of decipoint values:

Value (#)	Horizontal movement
0	current position
360	1/2 inch
2160	3 inches

SEQUENCE:	ESC &a#V (Vertical cursor control — decipoints)
FUNCTION:	For vertical positioning of the cursor in increments of decipoints (1/720 inch) within the print limits of the page. A + or − before the decipoint value (#) moves the cursor relative to the current cursor position (+ down; − up). A decipoint value without a + or − positions the cursor relative to the top margin (# = 0). The value field is valid to two decimal places. The previous table (ESC &a#H) shows examples of decipoint values.

SEQUENCE:	ESC = (Forward feed one half line)
FUNCTION:	Moves the print position forward one half line at the current lines per inch (ESC &l#D) or VMI (ESC &l#C) setting for one line only.

| SEQUENCE: | ESC &k#G   (Print line termination) |
| FUNCTION: | Selects the printer's interpretation of the computer's line termination character. The table below shows the print line termination selection values: |

Value (#)	Computer termination	Printer interpretation
0 (default)	CR	CR
	LF	LF
	FF	FF
1	CR	CR + LF
	LF	LF
	FF	FF
2	CR	CR
	LF	CR + LF
	FF	CR + FF
3	CR	CR + LF
	LF	CR + LF
	FF	CR + FF

CR = Carriage Return
LF = Line feed
FF = Form feed

| SEQUENCE: | ESC &f#S   (Push/pop position) |
| FUNCTION: | Allows the cursor position to be saved (pushed) and recalled (popped) at any time. Up to 20 cursor positions can be stored at one time with the last cursor position pushed (# = 0) being the first position popped (# = 1), the second cursor position is next in line to be popped, etc. The example below shows push/pop usage: |

ESC &a100h200V	Sends cursor to position (100, 200).
ESC &f0S	Pushes the current cursor position.
ESC &a200h300V	Sends cursor to position (200, 300).
ESC &f0S	Pushes the current cursor position.
ESC &a400h500V	Sends cursor to position (400, 200).
ESC &f1S	Pops the cursor to the last pushed cursor position (200, 300).
ESC &f1S	Pops the cursor to the next to last pushed cursor position (100, 200)

Character and Font Control

The character and font escape sequence codes control the creation of characters and fonts.

SEQUENCE: ESC (# #   (Select primary font symbol set)
ESC) # #   (Select secondary font symbol set)

FUNCTION: Select the primary and secondary font symbol sets. The following table lists examples of symbol sets.

Symbol set	Primary font escape sequence	Secondary font escape sequence
Math-7	ESC (0 A	ESC) 0 A
Line Draw	ESC (0 B	ESC) 0 B
ISO 60:		
Norwegian version 1	ESC (0 D	ESC) 0 D
ISO 61:		
Norwegian version 2	ESC (1 D	ESC) 1 D
Roman Extensions	ESC (0 E	ESC) 0 E
ISO 4: United Kingdom	ESC (1 E	ESC) 1 E
ISO 25: French	ESC (0 F	ESC) 0 F
ISO 69: French	ESC (1 F	ESC) 1 F
German	ESC (0 G	ESC) 0 G
ISO 21: German	ESC (1 G	ESC) 1 G
Greek-8	ESC (8 G	ESC) 8 G
ISO 15: Italian	ESC (0 I	ESC) 0 I
ISO 14: JIS-ASCII	ESC (0 K	ESC) 0 K
ISO 57: Chinese	ESC (2 K	ESC) 2 K
Technical-7	ESC (1 M	ESC) 1 M
Math-8	ESC (8 M	ESC) 8 M
ISO 100:		
ECMA-94 (Latin 1)	ESC (0 N	ESC) 0 N
OCRA	ESC (0 O	ESC) 0 O
OCRB	ESC (1 O	ESC) 1 O
ECMA-94 (Latin 1)		
(JX-9C5Z Z Font card)	ESC (11Q	ESC) 11Q
ISO 11: Swedish	ESC (0 S	ESC) 0 S
Spanish	ESC (1 S	ESC) 1 S
ISO 17: Spanish	ESC (2 S	ESC) 2 S
ISO 10: Swedish	ESC (3 S	ESC) 3 S
ISO 16: Portuguese	ESC (4 S	ESC) 4 S
ISO 84: Portuguese	ESC (5 S	ESC) 5 S
ISO 85: Spanish	ESC (6 S	ESC) 6 S
ISO 6: ASCII	ESC (0 U	ESC) 0 U
Legal	ESC (1 U	ESC) 1 U

ISO 2: International		
Reference Version	ESC (2 U	ESC) 2 U
OEM-1	ESC (7 U	ESC) 7 U
Roman-8	ESC (8 U	ESC) 8 U
PC-8	ESC (10 U	ESC) 10 U
PC-8 (D/N)	ESC (11 U	ESC) 11 U
Pi Font	ESC (15 U	ESC) 15 U

SEQUENCE: ESC (s # P   (Select primary font character spacing)
FUNCTION: Selects proportional (# = 1) or fixed (# = 0) character spacing for the primary font. Fixed spacing assigns all characters the same amount of space, while proportional spacing assigns different spacing depending on the characters' horizontal spread (an M receives more space then an I). The resident default font spacing is fixed. If the printer does not contain a proportionally spaced primary font, ESC (s1P will be ignored.

SEQUENCE: ESC)s # P   (Select secondary font character spacing)
FUNCTION: Selects proportional (# = 1) or fixed (# = 0) character spacing for the secondary font. Fixed spacing assigns all characters the same amount of space, while proportional spacing assigns different spacing depending on the characters' horizontal spread (an M receives more space than an I). The resident default font spacing is fixed. If the printer does not contain a proportionally spaced secondary font, ESC)s1P will be ignored.

SEQUENCE: ESC (s # H   (Select primary font pitch)
FUNCTION: Selects the pitch (characters per inch) to print the primary character font. To print in the specified pitch, a font with the specified pitch must be loaded, or a font with the next smallest pitch will be automatically selected. If a font with a smaller pitch does not exist, then a font with the next largest pitch will be selected. Font pitch is ignored if proportional spacing is active and available in the requested symbol set. The table below shows examples of pitch values: The factory default primary pitches are 10 cpi.

Value (#)	Pitch (cpi)
10	10
12	12
16.66	16.66

cpi = characters per inch

SEQUENCE: ESC)s # H   (Select secondary font pitch)
FUNCTION: Selects the pitch (characters per inch) to print the secondary character font. To print in the specified pitch, a font with the specified pitch must be loaded, or a font with the next smallest pitch will be automatically selected. If a font with a smaller pitch does not exist, then a font with the next largest pitch will be selected. Font pitch is ignored if proportional spacing is active and available in the requested symbol set. The previous table (ESC (s # H) shows examples of pitch values.
The factory default secondary pitches are 10 cpi.

SEQUENCE:	ESC (s#V (Select primary font point size)
FUNCTION:	Selects the font size (character height) to print the primary character font. The table below shows examples of point values:
	The factory default height is 12 points.
	One point is 1/72 inch.

Value (#)	Point size
7	7
8	8
8.5	8.5
10	10
12	12
14.4	14.4

SEQUENCE:	ESC)s#V (Select secondary font point size)
FUNCTION:	Selects the font size (character height) to print the secondary character font. The previous table (ESC (s#V) shows examples of point values.
	The factory default height is 12 points.

SEQUENCE:	ESC (s#S (Select primary font character style)
FUNCTION:	Selects the character style (upright or italic) to print the primary character font. To print italics, an italic font must be loaded. The table below shows the character style values:
	The factory default style is upright.

Value (#)	Character style
0	upright
1	italic

SEQUENCE:	ESC)s#S (Select secondary font character style)
FUNCTION:	Selects the character style (upright or italic) to print the secondary character font. To print italics, an italic font must be loaded. The table above (ESC (s#S) shows the character style values.
	The factory default style is upright.

SEQUENCE:	ESC (s#B (Select primary font thickness)
FUNCTION:	Selects the character thickness (stroke weight) to print the primary character font. To print a different character thickness, a font with that thickness font must be loaded. The table below shows the thickness values:
	The factory default primary stroke weight is zero.

Value (#)	Thickness
−7	Ultra Thin
−5	Thin
−3	Light
0	Medium
+3	Bold
+5	Black
+7	Ultra Black

If the specified stroke weight is greater than or equal to 0 and is not available, the next thicker available stroke weight will be selected. If no thicker stroke weight is available, the closest available thinner stroke weight will be selected.

If the specified stroke weight is less than zero and is not available, the next thinner available stroke weight will be selected. If no thinner stroke weight is available, the closest available thicker stroke weight will be selected.

SEQUENCE: ESC)s#B   (Select secondary font thickness)
FUNCTION: Selects the character thickness (stroke weight) to print the secondary charac-
             ter font. To print a different character thickness, a font with that thickness must
             be loaded. The previous table (ESC (s#B) shows the thickness values.
             The factory default primary stroke weight is zero.

SEQUENCE: ESC (s#T   (Select primary font typeface)
FUNCTION: Selects the typeface to print the primary character font. To print a different
             character typeface, a font with that typeface must be loaded. The table below
             shows the typeface values:
             The factory default primary font typeface is courier.

Value (#)	Typeface
0	Line printer
1	Pica
2	Elite
3	Courier
4	Helvetica
5	Times roman
6	Gothic
7	Script
8	Prestige
9	Caslon *
10	Orator *
11	Presentations
17	Optima *
18	Goramond *
19	Cooper Black *
20	Coronet Bold *
21	Broadway *
22	Bouer Bodoni Black Condensed *
23	Century Schoolbook *
24	University Roman *

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SEQUENCE: ESC)s#T   (Select secondary font typeface)
FUNCTION: Selects the typeface to print the secondary character font. To print a different
             character typeface, a font with that typeface must be loaded. The previous table
             (ESC (s#T) shows the typeface values.
             The factory default secondary font typeface is courier.

SEQUENCE:	ESC &k#S (Select font pitch)
FUNCTION:	Selects either standard pitch (10 characters per inch) or compressed pitch (16.66 characters per inch) to print both primary and secondary character fonts. The table below shows the pitch values:

Value (#)	Pitch (cpi)
0	10
2	16.66

SEQUENCE:	ESC (#@ (Primary font default)
FUNCTION:	Selects different font/symbol sets for the primary font with the current page orientation.

Value (#)	Primary font default function
3	Selects the default font (current page orientation must be maintained) and sets the primary font characteristics to the default font. If the font is proportionally spaced, the pitch (cpi) is not changed.

SEQUENCE:	ESC)#@ (Secondary font default)
FUNCTION:	Selects different font/symbol sets for the secondary font in the current page orientation.

Value (#)	Secondary font default function
3	Selects the default secondary font (current page orientation must be maintained) and sets the secondary font characteristics to the default font. If the font is proportionally spaced, the pitch (cpi) is not changed.

SEQUENCE:	ESC &d#D (Select automatic underline)
FUNCTION:	Underlines all following characters until canceled by ESC &d@ (the next escape sequence). The factory default is underline disabled.

#	
0	Fixed position
3	Floating position

SEQUENCE:	ESC &d@ (Cancel automatic underline)
FUNCTION:	Cancels the underline mode set by ESC &d#D.

SEQUENCE:	ESC *c#D (Font ID)
FUNCTION:	Labels a particular font with a number for identification purposes. The number range of the font ID value (#) is 0 to 32767, however, the printer can store a maximum of 32 fonts at one time. Default ID is 0.

SEQUENCE: ESC *c#F   (Character and font control)
FUNCTION: Specifies the font/character control function to be performed on the font last specified by the ESC *c#D (Specify font ID) escape sequence. # specifies the control function. The table below shows descriptions of the font/character control values:

Value (#)	Font and character control functions
0	Delete all fonts (temporary and permanent)
1	Delete all temporary fonts
2	Delete font (last font ID specified)
3	Delete character code (font ID and character code previously specified)
4	Make font temporary (last font ID specified)
5	Make font permanent (last font ID specified)
6	Copy/assign current font (last font ID specified)

Font/character control functions 2 to 6 must be preceded by a font ID escape sequence.

Note: If any part of the current font is deleted, the page is closed, all pages are printed, and then the font is deleted. If a font is deleted and not used on the current page, all pages (except the current page) are printed, and then the font is deleted.

SEQUENCE: ESC (#X   (Designate primary download· font)
FUNCTION: Designates a particular downloaded font as the primary (default) font. The (#) value designates one of up to 32 fonts previously labeled by the font ID escape sequence (ESC *c#D). If the designated font is present and properly oriented, all of its characteristics (except orientation) become those of the primary font. If the designated font is proportionally spaced, the pitch (cpi) is not changed.

SEQUENCE: ESC)#X   (Designate secondary download font)
FUNCTION: Designates a particular downloaded font as the secondary font. The (#) value designates one of up to 32 fonts previously labeled by the font ID escape sequence (ESC *c#D). If the designated font is present and properly oriented, all of its characteristics (except orientation) become those of the secondary font. If the designated font is proportionally spaced, the pitch (cpi) is not changed.

	SEQUENCE:	ESC)s#W [DATA]	(Download font description)

SEQUENCE: ESC)s#W [DATA]   (Download font description)

FUNCTION: Creates a font header which describes the characteristics of the font last speci-
fied by the font ID. The field value (#) specifies the number of bytes in the
font descriptor data field. If a font with the same font ID exists, the previous
font will be deleted from printer memory when the new valid download font
escape sequence is received. If there is not enough memory to create the new
font, the new font and the font with the same font ID are deleted.

Byte	15-MSB 8	7 LSB-0
0	Font Descriptor Size	
2	Reserved	Font Type
4	Reserved	
6	Baseline Distance	
8	Cell Width	
10	Cell Height	
12	Orientation	Spacing
14	Symbol Set	
16	Pitch (Default HMI)	
18	Height	
20	xHeight	
22	Width Type	Style
24	Stroke Weight	Typeface
26	Reserved	Serif Style
28	Reserved	
30	Underline Distance	Underline Height
32	Text Height	
34	Text Width	
36	Reserved	
38	Reserved	
40	Pitch Extended	Height Extended
42	Reserved	
44	Reserved	
46	Reserved	
48-63	Font Name	

Font descriptor size:

Data byte 0 specifies the number of bytes in the font descriptor. This value
is ignored by your Laser Printer but should be set to 64.
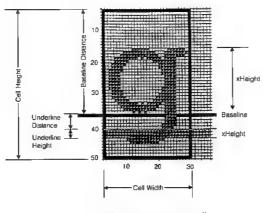
Font type:

Data byte 3 specifies the font as being 7-bit or 8-bit.

Value	Font type
0	7-bit font (print characters 32-127 decimal)
1	8-bit font (print characters 32-127 and 160-255 decimal)
2	pc-8 (all character codes are printable except 0, 7 to 15, and 27 decimal)

Baseline distance:

Data bytes 6 and 7 specify the distance from the top of the character cell to the baseline in dots. The value is the same for portrait or landscape orientation; see the following figure. The baseline must be contained within the character cell. Therefore the value of the baseline distance falls between 0 and the cell height minus 1.

The character cell
(Portrait orientation)

Cell width:

Data bytes 8 and 9 specify the width of the character cell in dots. The cell width range is 1 to 4200 dots.

Cell height:

Data bytes 10 and 11 specify the height of the character cell in dots. The cell width range is 1 to 4200 dots.

Orientation:

Data byte 12 specifies the orientation of the font.

Value	Orientation
0	portrait
1	landscape

Spacing:

Data byte 13 specifies fixed or proportional character spacing for the font.

Value	Spacing
0	fixed
1	proportional

Symbol set:

Data bytes 14 and 15 select the symbol set to be used for the new font. The number to select the symbol set is calculated by multiplying the number in the symbol set field value by 32, adding to it the decimal ASCII value of the letter, and then subtracting 64 from the total.

Symbol set field value = ROMAN 8 = 8 U = 8×32 + (ASCII value for U = 85) $-$ 64 = 256 + 85 $-$ 64 = 277 = Symbol set byte value

The following table lists the symbol sets, their field values and byte values.

Symbol set	Symbol set field value	Symbol set byte value
Math-7	0 A	1
Line Draw	0 B	2
ISO 60: Norwegian version 1	0 D	4
ISO 61: Norwegian version 2	1 D	36
Roman Extensions	0 E	5
ISO 4: United Kingdom	1 E	37
ISO 25: French	0 F	6
ISO 69: French	1 F	38
German	0 G	7
ISO 21: German	1 G	39
Greek-8	8 G	263
ISO 15: Italian	0 I	9
ISO 14: JIS-ASCII	0 K	11
ISO 57: Chinese	2 K	75
Technical-7	1 M	45
Math-8	8 M	269
ISO 100: ECMA-94 (Latin 1)	0 N	14
OCRA	0 O	15
OCRB	1 O	47
ISO 11: Swedish	0 S	19
Spanish	1 S	51
ISO 17: Spanish	2 S	83
ISO 10: Swedish	3 S	115
ISO 16: Portuguese	4 S	147
ISO 84: Portuguese	5 S	179
ISO 85: Spanish	6 S	211
ISO 6: ASCII	0 U	21
Legal	1 U	53
ISO 2: Intl Reference Version	2 U	85
OEM-1	7 U	245
Roman-8	8 U	277
PC-8	10 U	341
PC-8 (D/N)	11 U	373
Pi Font	15 U	501

Pitch:
Data bytes 16 and 17 specify the pitch (cpi) of the font characters. The pitch value is calculated by dividing the horizontal resolution of the printer (300 dots per inch) by the desired pitch. The pitch is specified in increments of 1/4 (.25) of a dot and the pitch value can range from 0 to 16800. A value exceeding 16800 will be set to 16800.

Height:
Data bytes 18 and 19 specify the height of the font characters. The height value is calculated by multiplying the desired height (in dots) by 4. The height can be specified to 1/4 (.25) of a dot. The height value can range from 0 to 10922. A value exceeding 10922 will be set to 10922.

x height:
Specifies the height of the lower case "x" in quarter-dot units.
This is ignored by your Laser Printer.

Width type:
Specifies the proportionate width of characters in the font.
This is ignored by your Laser Printer.

Style:
Data byte 23 specifies upright or italic font characters.

Value	Style
0	upright
1	italic

Stroke weight:
Data byte 24 specifies the thickness of the strokes used in the font. The thickness value may vary from -7 to 7.

Value	Thickness
-7	maximum light
-3	light
0	normal (medium)
3	heavy (bold)
7	maximum heavy (bold)

Typeface:
Data byte 25 specifies the typeface of the fonts.

Value (#)	Typeface
0	Line printer
1	Pica
2	Elite
3	Courier
4	Helvetica
5	Times Roman
6	Gothic
7	Script
8	Prestige
9	Caslon *
10	Orator *
11	Presentations
17	Optima *
18	Goramond *
19	Cooper Black *
20	Coronet Bold *
21	Broadway *
22	Bouer Bodoni Black Condensed *
23	Century Schoolbook *
24	University Roman *

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Underline distance:
Data byte 30 specifies the distance from the baseline to the top dot row of the underline in dots.
A positive value specifies an underline position above the baseline. A negative value specifies an underline position below the baseline.

Underline height:
Data byte 31 specifies the thickness of the underline in dots.
Your Laser Printer always prints 3 dot thick underlines.

Text height:
Specifies the font's optimum inter-line spacing in quarter-dot units.
This is ignored by your Laser Printer.

Text width:
Specifies the font's optimum character spacing in quarter-dot units.
This is ignored by your Laser Printer.

Pitch extended:

Data byte 40 specifies Pitch Extended value.

This is an addition to the Pitch field which extends the pitch an extra eight bits. The value of this field is in 1024ths of one dot. For example, a 17 pitch font would have a Pitch field of 70 (17.5 dots, or 17.1429 cpi) and a Pitch Extended field of 150 (0.1465 dots additional, which gives 17.6465 dots, or 17.0005 cpi).

Height extended:

Data byte 41 specifies Height Extended value.

This is an additional to the Height field which extends the height an extra eight bits. The value field is in 1024ths of one dot. For example, a 10 point font would have a height field of 166 (41.5 dots, or 9.96 points) and a Height Extended field of 170 (0.1660 dots additional, which gives 9.9998 points).

Font name:

This is a 16-character ASCII field to which the user may assign a font name. Your Laser printer prints this font name on the Font Sample Printout.

SEQUENCE: ESC (s#W [DATA]   (Download character descriptor)
FUNCTION: Downloads a character to the printer. The downloaded character is assigned the character code last specified and is added to the font specified by the font ID escape sequence (ESC *c#D). If an existing character has the same character code as the download character, the existing character is deleted from printer memory and the new character is downloaded. If there is not enough memory for the download character, the font will be deleted. The field value (#) specifies the number of bytes in the character descriptor/data field. The table below shows the character descriptor data values:

Byte	15-MSB	8	7	LSB-0
0	format (4)		continuation	
2	description size		class	
4	orientation		always 0	
6	left offset			
8	top offset			
10	character width			
12	character height			
14	delta X			
16	character data			
	:			
	:			

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Format:

Specifies the format of the character descriptor and data. The format number used by your Laser Printer is 4.

Continuation:

Specifies whether the following data is a character descriptor block (0) or a continuation of the data (1) associated with the previous character descriptor. Because the escape sequence value field is limited to 32767, characters whose number of descriptor and data block bytes would exceed this limit must be downloaded in two or more blocks. The following illustrates the format of a character data continuation block.

Byte	15-MSB 8	7 LSB-0
0	format	continuation (1)
2	character data:	
	:	
	:	

Descriptor size:

Specifies the size of the character descriptor in bytes. The descriptor size used by your Laser Printer is 14.

Class:

Specifies the format of the character data. The character data format number used by your Laser Printer is 1.
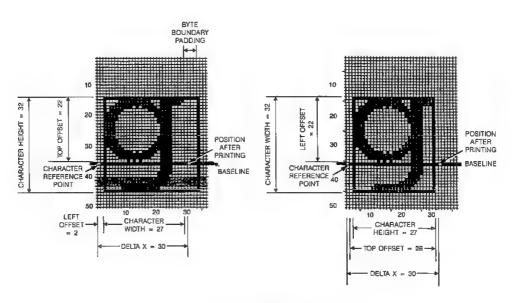
Orientation:

Data byte 4 specifies the orientation of the font.

Value	Orientation
0	portrait
1	landscape

Left offset:

Data bytes 6 and 7 specify the distance from the reference point to the left side of the character pattern in dots. The value is relative to the physical page, so the value is different for portrait or landscape orientation, see the figure below. . The range of left offset values is −4200 to 4200.

The character cell
(portrait and landscape orientation)

Top offset:

Data bytes 8 and 9 specify the distance from the reference point to the top of the character pattern in dots. The value is relative to the page orientation, so the value is different for portrait or landscape orientation, see the figure above. The range of top offset values is −4200 to 4200.

Character width:

Data bytes 10 and 11 specify the width of the character in dots. The character width value is relative to the page orientation, so the value is different for portrait or landscape orientation, see the figure above. The range of character width values is 1 to 4200.

Character height:

Data bytes 12 and 13 specify the height of the character in dots. The character height value is relative to the page orientation, so the value is different for portrait or landscape orientation, see the figure above. The range of character height value is 1 to 4200.

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Delta X:

Data bytes 14 and 15 are used to specify the horizontal (X) distance the cursor will travel after printing a specified proportionally spaced character. Delta X is specified as the desired number of dots multiplied by 4. For example, if the desired character spacing is 5 dots, the delta X value would be 20 ($5 \times 4 = 20$). The range of delta X is 0 to 16800.

Character data:

Data bytes from 16 are the raw data used to represent the character. The character data is composed of a string of bytes that define the character. The bytes are defined in rows of bytes describing the character width. Each row of bytes is made up of binary data (0's and 1's). This binary data describes the dots and spaces (1's and 0's) the printer will receive, process, and print. The total number of character data equals the character width in bytes multiplied by the character height in dots.

SEQUENCE:	ESC *c#E (Character code)
FUNCTION:	Specifies the decimal ASCII value of a character to be downloaded. The character code value (#) can be a number from 0 to 255 which corresponds to an 8-bit ASCII character.

Graphics Control

These escape sequences control the resolution, start, transfer, and end of custom raster graphics development. Advanced escape sequence codes control the printing of rules, patterns and gray scales.

SEQUENCE:	ESC *t#R (Raster graphics resolution)
FUNCTION:	Sets the raster resolution (#) of the graphics to be printed. The default setting for graphics resolution is 75 dpi. The table below lists the maximum graphics image size using the four available resolutions.

If the optional 1.5 MB expansion memory is installed, up to a full page of graphics can be printed at 300 dpi.

Resolution (#)	Maximum raster image
75	full page
100	full page
150	full page
300	30 sq inches

SEQUENCE:	ESC *r#A (Start raster graphics)
FUNCTION:	Notifies the printer that graphics data will follow and specifies the page position where the graphics printing will start. If # = 0, graphics will be started at the leftmost print position (not the left margin) on the page. If # = 1, graphics will be started at the current cursor position, the cursor may be positioned before sending this command. When printing graphics with landscape orientation, the left graphics margin becomes the top of the page margin.

SEQUENCE: ESC *b#W [DATA]   (Transfer raster graphics)
FUNCTION: Specifies the number of binary graphics data bytes (#) to be sent to the printer
              for processing. The bytes of data are translated to bits of raster graphics data
              and sent to the printer one line (dot row) at a time. ESC *b#W must be sent
              to the printer for each line of graphics data.

SEQUENCE: ESC *rB   (End raster graphics)
FUNCTION: Informs the printer that all raster graphics data has been transferred to the printer
              and sets the printer to accept text data.

Example:

To print a raster graphic image of an arrow, carry out the following procedure:

1. Specify the cursor location:
    ESC*p300x400Y   Specifies the point (300, 400) in the escape sequences.
2. Specify the resolution:
    ESC*t75R   Sets the raster graphics resolution to 75 dots per inch.
3. Specify the start of raster graphics:
    ESC*r1A   Specifies the start of graphics printing at the current
                        position.
4. Transfer the raster graphics data:
    ESC *b#W   Send the image data one line at a time.
5. Signal the end of raster graphics data:
    ESC*rB

SEQUENCE: ESC *c#A   (Horizontal rectangle size — dots)
FUNCTION: Specifies the length of a horizontal rectangle in dots (300 dpi). Power on or
              reset defaults the horizontal rectangle size to 0. Values greater than the page
              size are accepted, but are printed within the printable area boundaries.

              Example: To specify a horizontal rectangle of 5 inches, input the escape
                        sequence ESC *c1500A ($5 \times 300 = 1500$).

SEQUENCE: ESC *c#H   (Horizontal rectangle size — decipoints)
FUNCTION: Specifies the length of a horizontal rectangle in decipoints (720/inch). Power
              on or reset defaults the horizontal rectangle size to 0. Values greater than the
              page size are accepted, but are printed within the printable area boundaries.

              Example: To specify a horizontal rectangle of 5 inches, input the escape
                        sequence ESC *c3600H ($5 \times 720 = 3600$).

              The value field is valid to four decimal places.

SEQUENCE: ESC *c#B   (Vertical rectangle size — dots)
FUNCTION: Specifies the length of a vertical rectangle in dots (300 dpi). Power on or reset
              defaults the vertical rectangle size to 0. Values greater than the page size are
              accepted, but are printed within the printable area boundaries.

              Example: To specify a vertical rectangle of 5 inches, input the escape sequence
                        ESC *c1500B ($5 \times 300 = 1500$).

SEQUENCE:	ESC *c#V (Vertical rectangle size- decipoints)
FUNCTION:	Specifies the length of a vertical rectangle in decipoints (720/inch). Power on or reset defaults the vertical rectangle size to 0. Values greater than the page size are accepted, but are printed within the printable area boundries.

Example: To specify a vertical rectangle of a 5 inches, input the escape sequence ESC *c3600V (5 × 720 = 3600).

SEQUENCE:	ESC *c#P (Print rule/pattern)
FUNCTION:	Selects if a rule, a defined pattern, or a gray scale pattern is to be printed. It then commands the printer to start printing. When ESC *c#P is received, the area defined by the horizontal and vertical rule/pattern escape sequences is filled with the specified pattern. If a specified pattern or gray scale pattern is selected, the printer will print the pattern defined by the last pattern ID received. The table below shows the print value selections.

Value (#)	Print selection
0	black rule
2	gray scale pattern
3	defined pattern

SEQUENCE:	ESC *c#G (Pattern ID)
FUNCTION:	Selects 1 of 8 gray shade patterns or 1 of 6 defined patterns when used with the print rule (ESC *c#P) escape sequence. Out of range pattern ID values are ignored. The table below shows the pattern ID value selections for defined pattern and gray scale pattern printing.

Pattern ID values

Value (#)	Defined pattern	Value (#)	Gray scale pattern
1	horizontal lines	1 to 2	2% gray
2	vertical lines	3 to 10	10% gray
3	+ 45 deg. lines	11 to 20	15% gray
4	− 45 deg. lines	21 to 35	30% gray
5	grid	36 to 55	45% gray
6	45 deg. grid	56 to 80	70% gray
		81 to 99	90% gray
		100	100% gray (Black)

Examples:

To print a 3 inch by 5 inch black area, carry out the following procedure:

1. Specify the cursor location:
   ESC*p 300x400Y   Specifies the point (300, 400) in the PCL coordinate
                    system.
2. Specify the width of the area:
   ESC*c900A   Sets the width to 900 dots (3 inches).
3. Specify the height of the area:
   ESC*c1500B   Sets the height to 1500 dots (5 inches).
4. Print the solid filled area:
   ESC*c0P

Macro Control

These escape sequences control the creation and use of macros. A macro is an escape sequence which combines other escape sequences to perform a task. The macro can be stored and then recalled to perform the same task again, the printer can store up to 32 macros at a time.

SEQUENCE: ESC &f#Y   (Specify macro ID)
FUNCTION: Assigns an ID Number (#) to a macro. If you wish to store (download) or execute (retrieve) the macro, you must first use this escape sequence to name or refer to the macro. Up to 32 macros (# = 0 to 32767) can be numbered at one time. Default = 0

SEQUENCE: ESC &f#X   (Define macro control)
FUNCTION: Specifies the macro control to be performed using the macro control values (# = 0 to 10). The table below shows the macro control values:

Value (#)	Macro control function
0*	start macro definition
1	stop macro definition
2*	execute macro
3*	call macro
4*	enable auto macro overlay
5	disable auto macro overlay
6	delete all macros
7	delete all temporary macros
8*	delete macro
9*	make macro temporary
10*	make macro permanent

* Must be preceded by a macro ID escape sequence.

Macro control function descriptions

Value	Description
0	ESC &f0X, start macro definition, creates a temporary macro identified by the macro ID preceding it. All data is read and stored until ESC &f1X (stop macro definition) or a reset is received.
1	ESC &f1X, stop macro definition, indicates the end of the macro data.
2	ESC &f2X, execute macro, identified by the macro ID in the current environment. When the macro has been executed, any escape sequences modified in the current environment by the macro are retained, however, the cursor position remains unchanged. See the table below for a listing of current environment escape sequences:

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Current environment escape sequences

Page length	Primary font address
Page orientation	Font ID
Input control	Character code
Copy count	Macro ID
Margins	VMI/line spacing
Top	Horizontal rule spacing
Left	Vertical rule size
Right	Underline mode
Perforation skip	Graphics resolution
Line termination	Graphics mode
EOL (wrap) termination	Graphics left margin
Font attributes	Pattern ID
HMI	

3   ESC &f3X, call macro, executes the macro identified by the macro ID in the current environment. After the macro has executed, any escape sequences modified in the current environment by the macro are deleted, and the current environment reverts to its previous values. However, the cursor position remains unchanged. See the table above for a listing of current environment escape sequence.

4   ESC &f4X, enable auto macro overlay, defines the macro identified by the macro ID for use as the auto macro overlay, replacing any previous auto macro overlay. If ESC &f4X is received, every page printed is executed using the overlay environment and overlay default values. After the macro has executed, the previous current environment is restored, replacing the overlay environment. The following tables show a listing of current overlay environment escape sequences:

Overlay environment escape sequences

Overlay	Page length
Page orientation	Copy count
Position stack	

Overlay default values

Top margin (1/2 in)	Font ID (0)
Bottom margin (1/2 in)	Character code (0)
Left margin (far left)	Macro ID (0)
Right margin (far right)	Current active position
Perf skip mode (enabled)	(Leftmost & top margin)
Line termination (0)	VMI/line spacing (6 lpi)
EOL wrap (off)	Horiz. rule size (0)
Font attributes (default)	Vert. rule size (0)
HMI (default)	Underline mode (off)
Primary font (default)	Graphics resolution (75 dpi)
Secondary font (default)	Graphics mode (off)
	Pattern ID (0)

5   ESC &f5X, disable auto macro overlay, exits the auto macro overlay function at the current page. Changing the page length or orientation disables the auto macro overlay after ESC &f5X is executed.

6   ESC &f6X delete all macros (temporary, permanent and auto macro overlays) that may have been in effect.

7   ESC &f7X delete all temporary macros (including auto macro overlays) that may have been in effect.

8   ESC &f8X delete macro last specified by the macro ID escape sequence (ESC &f#Y).

9   ESC &f9X, make macro temporary, designates the macro last specified by the macro ID escape sequence (ESC &f#Y) to be a temporary macro.

10   ESC &f10X, make macro permanent, designates the macro last specified by the macro ID escape sequence (ESC &f#y) to be a permanent macro.

        Example   Define a mcro with ID 7:
                        Send: ESC&f7y0X

                              .
                              .
                              .
                        escape sequences, control codes, and data to be used when the macro is called

                              .
                              .
                              .
                        ESC&f1X

                        Make the macro with ID 7 permanent:

                        Send: ESC&f7y10X

                        Implement the macro with ID 7 for automatic overlay:

                        Send: ESC&f7y4X

                        Delete the macro with ID 7:

                        Send: ESC&f7y8X

Other Control

SEQUENCE: ESC Y   (Select display functions mode)
FUNCTION: Disables all control codes and escape sequences and allows them to be printed as blanks (spaces) with two exceptions: carriage return (CR) is executed as a carriage return (CR) + line feed (LF), and ESC Z is executed and printed as a blank followed by a Z.

SEQUENCE: ESC Z   (Cancel display functions mode)
FUNCTION: Cancels ESC Y and allows all valid control codes and escape sequences to be executed after it is received. ESC Z is the power on state of the printer.

SEQUENCE: ESC &p#X [DATA]   (Select transparent print data)
FUNCTION: Sets the printer to process data without processing any control codes or escape sequences that may be included. The value field (#) specifies the number of bytes of data to be processed in this manner. Print data should follow immediately.

Example: To print a square bullet using the HP Laserjet II PC-8 Character Set, send the sequence:
ESC & p 1X(21)

SEQUENCE: ESC &s#C   (Line wrap)
FUNCTION: Enables and disables line wrap. If enabled, the printer executes a CR + LF if all (or part) of a character falls outside the right margin. The table below shows the line wrap selection values:

Value (#)	Line wrap
0	enabled
1	disabled (default)

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Printer Command Table

FUNCTION	SEQUENCE	COMMAND	PAGE
JOB CONTROL			
Interface self-test		ESC z	125
Printer reset		ESC E	125
Number of copies		ESC &ℓ#X	125
LINE and PAGE CONTROL			
Paper handling	Eject page	ESC &ℓ0H	126
	Paper cassette	ESC &ℓ1H	126
	Manual feed	ESC &ℓ2H	126
	Envelope manual feed	ESC &ℓ3H	126
	Second cassette unit	ESC &ℓ4H	126
	Envelope feeder	ESC &ℓ6H	126
PAGE LENGTH and SIZE			
Page size	Executive	ESC &ℓ1A	126
	Letter	ESC &ℓ2A	126
	Legal	ESC &ℓ3A	126
	Invoice	ESC &ℓ24A	126
	A4	ESC &ℓ26A	126
	B5	ESC &ℓ31A	126
	AFSP	ESC &ℓ32A	126
	Monarch	ESC &ℓ80A	126
	Commercial 10 (Business)	ESC &ℓ81A	126
	International DL	ESC &ℓ90A	126
	International C5	ESC &ℓ91A	126
Page length	Number of lines	ESC &ℓ#P	127
Page orientation	Portrait	ESC &ℓ0O	127
	Landscape	ESC &ℓ1O	127
MARGINS and TEXT LENGTH			
Top margin	Number of lines	ESC &ℓ#E	127
Text length	Number of lines	ESC &ℓ#F	128
Left margin	Left (column number)	ESC &a#L	128
Right margin	Right (column number)	ESC &a#M	128
Clear side margin settings		ESC 9	128
PERFORATION SKIP MODE			
Perforation skip	Disable	ESC &ℓ0L	128
	Enable	ESC &ℓ1L	128
HORIZONTAL COLUMN SPACING			
Horizontal motion index	Number of 1/120″ increments	ESC &k#H	128
VERTICAL LINE SPACING			
Set vertical motion index	Number of 1/48″ increments	ESC &ℓ#C	129
Set lines per inch	1 line/inch	ESC &ℓ1D	130
	2 lines/inch	ESC &ℓ2D	130
	3 lines/inch	ESC &ℓ3D	130
	4 lines/inch	ESC &ℓ4D	130
	6 lines/inch	ESC &ℓ6D	130
	8 lines/inch	ESC &ℓ8D	130
	12 lines/inch	ESC &ℓ12D	130
	16 lines/inch	ESC &ℓ16D	130
	24 lines/inch	ESC &ℓ24D	130
	48 lines/inch	ESC &ℓ48D	130

Printer Command Table (cont)

FUNCTION	SEQUENCE	COMMAND	PAGE
CURSOR CONTROL			
HORIZONTAL and VERTICAL			
Horizontal	Column	ESC &a#C	130
	Dots	ESC *p#X	130
	Decipoints	ESC &a#H	130
Vertical	Lines	ESC &a#R	130
	Dots	ESC *p#Y	131
	Decipoints	ESC &a#V	131
Half line feed		ESC =	131
LINE TERMINATION			
Print line termination	CR=CR LF=LF FF=FF	ESC &k0G	132
	CR=CR+LF LF=LF FF=FF	ESC &k1G	132

	CR=CR
	  LF=CR+LF
	  FF=CR+FF
		ESC &k2G	132

	CR=CR+LF
	  LF=CR+LF
	  FF=CR+FF
		ESC &k3G	132

PUSH/POP POSITION			
Push/pop position	Push	ESC &f0S	132
	Pop	ESC &f1S	132
CHARACTER and FONT CONTROL			
SYMBOL SET SELECTION			
Primary font symbol set	Math7	ESC (0A	133
	Line Draw	ESC (0B	133
	ISO 60: Norwegian Version 1	ESC (0D	133
	ISO 61: Norwegian Version 2	ESC (1D	133
	Roman Extension	ESC (0E	133
	ISO 4: United Kingdom	ESC (1E	133
	ISO 25: French	ESC (0F	133
	ISO 69: French	ESC (1F	133
	German	ESC (0G	133
	ISO 21: German	ESC (1G	133
	Greek8	ESC (8G	133
	ISO 15: Italian	ESC (0I	133
	ISO 14: JIS ASCII	ESC (0K	133
	ISO 57: Chinese	ESC (2K	133
	Math8	ESU (8M	133
	ISO 100: ECMA-94 (Latin 1)	ESC (0N	133
	OCR A	ESC (0O	133
	OCR B	ESC (1O	133
	ECMA-94(Latin 1) (JX-9C5Z Z Font card)	ESC (11Q	133
	ISO 11: Swedish	ESC (0S	133

Printer Command Table (cont)

FUNCTION	SEQUENCE	COMMAND	PAGE
	Spanish	ESC (1S	133
	ISO 17: Spanish	ESC (2S	133
	ISO 10: Swedish	ESC (3S	133
	ISO 16:		
	Portuguese	ESC (4S	133
	ISO 84:		
	Portuguese	ESC (5S	133
	ISO 85:		
	Spanish	ESC (6S	133
	ISO 6: ASCII	ESC (0U	133
	Legal	ESC (1U	133
	ISO 2: International		
	Reference Version	ESC (2U	134
	OEM-1	ESC (7U	134
	Roman-8	ESU (8U	134
	PC-8	ESC (10U	134
	PC-8 (D/N)	ESC (11U	134
	Pi Font	ESC (15U	134
Secondary font symbol set		ESC)# #	133
SPACING			
Primary font character	Proportional	ESC (s1P	134
spacing	Fixed	ESC (s0P	134
Secondary font character	Propotional	ESC)s1P	134
spacing	Fixed	ESC)s0P	134
PITCH			
Primary font pitch		ESC (s#H	134
Secondary font pitch		ESC)s#H	134
POINT SIZE			
Primary font point size		ESC (s#V	135
Secondary font point size		ESC)s#V	135
STYLE			
Primary font style	Upright	ESC (s0S	135
	Italic	ESC (s1S	135
Secondary font style	Upright	ESC)s0S	135
	Italic	ESC)s1S	135
CHARACTER THICKNESS			
Primary font thickness	Ultra thin	ESC (s-7B	135
	Thin	ESC (s-5B	135
	Light	ESC (s-3B	135
	Medium	ESC (s0B	135
	Bold	ESC (s+3B	135
	Black	ESC (s+5B	135
	Ultra black	ESC (s+7B	135
Secondary font thickness		ESC)s#B	136
TYPEFACE			
Primary font typeface	Line Printer	ESC (s0T	136
	Pica	ESC (s1T	136
	Elite	ESC (s2T	136
	Courier	ESC (s3T	136
	Helvetica	ESC (s4T	136
	Times Roman	ESC (s5T	136
	Gothic	ESC (s6T	136

Printer Command Table (cont)

FUNCTION	SEQUENCE	COMMAND	PAGE
	Script	ESC (s7T	136
	Prestige	ESC (s8T	136
	Caslon	ESC (s9T	136
	Orator	ESC (s10T	136
	Presentations	ESC (s11T	136
	Optima	ESC (s17T	136
	Garamond	ESC (s18T	136
	Cooper Black	ESC (s19T	136
	Coronet Bold	ESC (s20T	136
	Broadway	ESC (s21T	136
	Bauer Bodoni		
	Black Condensed	ESC (s22T	136
	Century Schoolbook	ESC (s23T	136
	University Roman	ESC (s24T	136
Secondary font typeface		ESC)s#T	136
FONT PITCH			
Primary & secondary			
Font pitch	10.00 pitch	ESC &k0S	137
(Alternate method)	16.66 pitch	ESC &k2S	137
Font default	Primary font	ESC (3@	137
	Secondary font	ESC)3@	137
UNDERLINE			
Automatic underline	Fixed position	ESC &d0D	137
	Floating position	ESC &d3D	137
	Cancel	ESC &d@	137
FONT MANAGEMENT			
Font ID	Font ID number	ESC *c#D	137
Character and font control	Delete all fonts	ESC *c0F	138
	Delete all temporary fonts	ESC *c1F	138
	Delete font	ESC *c2F	138
	Make font temporary	ESC *c4F	138
	Make font permanent	ESC *c5F	138
FONT SELECTION BY ID NUMBER			
Designate download fonts	Primary font	ESC (#X	138
	Secondary font	ESC)#X	138
SOFT FONT CREATION			
Download font description	Number of bytes	ESC)s#W [DATA]	139
Download character descriptor	Number of bytes	ESC (s#W [DATA]	144
Character code	Decimal ASCII	ESC *c#E	147
GRAPHICS CONTROL			
RASTER GRAPHICS			
Resolution	75 dots per inch	ESC *t75R	147
	100 dots per inch	ESC *t100R	147
	150 dots per inch	ESC *t150R	147
	300 dots per inch	ESC *t300R	147
Start raster graphics	Left graphics margin	ESC *r0A	147
	Current cursor	ESC *r1A	147
Transfer raster graphics	Number of rows	ESC *b#W [DATA]	148
End raster graphics		ESC *rB	148

Printer Command Table (cont)

FUNCTION	SEQUENCE	COMMAND	PAGE
RECTANGLE DIMENSIONS			
Rectangle width	Number of dots	ESC *c#A	148
(Horizontal size)	Number of decipoints	ESC *c#H	148
Rectangle height	Number of dots	ESC *c#B	148
(Vertical size)	Number of decipoints	ESC *c#V	149
RECTANGULAR AREA FILL			
Print rule/pattern	Black rule	ESC *c0P	149
	Gray scale pattern	ESC *c2P	149
	Defined pattern	ESC *c3P	149
Defined pattern	Horizontal line	ESC *c1G	149
	Vertical lines	ESC *c2G	149
	+45 deg. lines	ESC *c3G	149
	−45 deg. lines	ESC *c4G	149
	Grid	ESC *c5G	149
	45 deg. grid	ESC *c6G	149
Gray scale pattern	2% gray	ESC *c2G	149
	10% gray	ESC *c10G	149
	15% gray	ESC *c15G	149
	30% gray	ESC *c30G	149
	45% gray	ESC *c45G	149
	70% gray	ESC *c70G	149
	90% gray	ESC *c90G	149
	100% gray	ESC *c100G	149
MACRO CONTROL			
MACRO ID and CONTROL			
Macro ID	Macro ID number	ESC &f#Y	150
Define macro control	Start macro definition	ESC &f0X	150
	Stop macro definition	ESC &f1X	150
	Execute macro	ESC &f2X	150
	Call macro	ESC &f3X	150
	Enable auto macro overlay	ESC &f4X	150
	Disable auto macro overlay	ESC &f5X	150
	Delete all macros	ESC &f6X	150
	Delete all temp. macros	ESC &f7X	150
	Delete all macro	ESC &f8X	150
	Make macro temporary	ESC &f9X	150
	Make macro permanent	ESC &f10X	150
OTHER CONTROL			
Select display functions		ESC Y	153
Cancel display functions		ESC Z	153
Transparent print data	Number of bytes	ESC &p#X	
		[DATA]	153
Line wrap	Enabled	ESC &s0C	153
	Disabled (default)	ESC &s1C	153

Other Emulations

The embedded format precedes and follows the commands by two forward slashes:

// (command) //

In order for embedded commands to be recognized as valid commands and not printable data, the line containing the embedded command(s) must begin with a CR control code, contain no other printable characters (control codes such as SP between commands are OK), and end with a CR control code. It is permissable to begin and end the line with CR LF pairs but the LFs (line feeds) will be executed. If the command is not a valid command or does not conform to the embedded format, the characters will be treated as normal printable data and be printed. If the command is valid but cannot be acted on (such as a command to select the envelope feeder when it is not installed) the command will be ignored but not printed.

The individual sections describing the embedded format versions of the commands may show spaces between the characters of the command. These are only for clarity and are not part of the command.

Note:
The embedded commands are not supported by all the escape commands.

All Emulation Commands

FUNCTION	COMMAND	REMARKS
All Emulation Change	ESC ~ ESC ~ (n)A	n=1 DEFAULT EMULATION n=2 FX-80 n=3 D630 n=4 HPLJII n=5 IBM PP n=6 IBM GP

The commands available in Epson FX-80 emulation are listed below.

Epson FX-80 Command Codes

FUNCTION	COMMAND	REMARKS
Bell	BEL	
Backspace	BS	
Cancel	CAN	
Horizontal Tab	HT	The maximum HTAB position is subject to current paper width.
Line Feed	LF	
Vertical Tab	VT	If a request is made for a location outside the printer's logical page, the current page is ejected.
Carriage Return	CR	
Page End	FF	
Condensed Mode ON	SI	Characters are printed at 17.1 CPI (137 characters on one 8-inch line). When current paper size is letter or legal, and print orientation is portrait, 132 characters are printed over a width of 7.7 inches, until left or right margins are specified.
Enlarged Mode ON	SO	Characters are printed in double width.
Printer Select	DC1	
Condensed Mode OFF	DC2	
Deselect Printer	DC3	
Enlarged Mode OFF	DC4	
Delete	DEL	
Enlarged Mode ON	ESC SO	Same as SO.
Condensed Mode ON	ESC SI	Same as SI.
1/8″ LF Pitch	ESC 0	
7/72″ LF Pitch	ESC 1	
1/6″ LF Pitch	ESC 2	
n/216″ LF Pitch	ESC 3 (n)	$(0 \le n \le 255)$
Italic (Alternate) Mode ON	ESC 4	Italic font is selected.
Italic (Alternate) Mode OFF	ESC 5	Normal font is selected.
Print Code Area Expand	ESC 6	80_H to $9F_H$ are accepted as character set.
Print Code Area Expand Cancel	ESC 7	ESC 6 setting cancel.
Paper Out Detection Disable	ESC 8	This command is ignored.

Epson FX-80 Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Paper Out Detection Enable	ESC 9	This command is ignored.
Print Mode Select	ESC ! (n)	$(0 \le n \le 63)$
Underline Print Mode ON/OFF	ESC — (n) (minus)	n=1, 49 ON n=0, 48 OFF
VFU Channel Select	ESC / (n)	$(0 \le n \le 7)$
Home Head (Printing from left mast to right for 1 line)	ESC <	This command is ignored since it has no print head mechanism.
MSB 0 Set	ESC =	
MSB 1 Set	ESC >	
MSB Control Sequence Cancel	ESC #	
Printer Initialize	ESC @	Print buffer is cleared. All printer status is initialized as the printer is turned ON.
Line Space Setting	ESC A (n)	n/72″ LF Pitch Setting. $(0 \le n \le 85)$
Vertical Tab Set	ESC B (n)	$(1 \le n \le 254)$ Max. 16 positions.
Form Length Setting by Number of Lines	ESC C (n)	Form length=line spacing × n. $(1 \le n \le 127)$ If a request is made for a specified position outside the printer's logical page, the position is specified to the appropriate logical page limit.
Form Length Setting in Inches	ESC C(0) (n)	$(1 \le n \le 22)$ If a request is made for a specified position outside the printer's logical page, the position is specified to the appropriate logical page limit.
Horizontal Tab Set	ESC D (n)	$(1 \le n \le 137)$ When the specified HTAB position crosses the current paper width, the data is ignored. The maximum tab number is 256.
Emphasized Mode Setting	ESC E	Double printing at 2-dot spacing.
Emphasized Mode Cancel	ESC F	
Double Strike Mode Setting	ESC G	Double printing at 1-dot spacing.
Double Strike Mode Cancel	ESC H	

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Epson FX-80 Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Control Code Select	ESC I	Undefined codes in the range 00_H to $1F_H$ and 80_H to $9F_H$ are assigned as character code. n=0, 48 Control code n=1, 49 Printable character
n/216″ Line Feed	ESC J (n)	$0 \leq n \leq 255$
8-pin Normal Density Bit Image	ESC K (n)	Prints about 1/5 page without expansion memory.
8-pin Dual Density Bit Image	ESC L (n)	Same as above.
Elite Size Mode	ESC M	12 CPI
Perforation Line Skip ON	ESC N (n)	This command is ignored.
Perforation Line Skip OFF	ESC O	This command is ignored.
Pica Size Mode	ESC P	
Right Margin Set	ESC Q (n)	n: depends on print mode.
National Character Select	ESC R (n)	$(0 \leq n \leq 10)$
Super/Subscript Mode ON	ESC S (n)	n=0, 48 Superscript n=1, 49 Subscript
Super/Subscript Mode OFF	ESC T	
One-way Print ON/OFF	ESC U (n)	This command is ignored.
Enlarged Mode Set	ESC W (n)	n=1, 49 ON n=0, 48 OFF
Double-Speed Double-Density Bit Image	ESC Y (n)	Prints about 1/5 page without expansion memory.
Quadruple Density Bit Image	ESC Z (n)	Prints about 1/5 page without expansion memory.
VFU Position Set	ESC b (n)	VFU has 8 channels (0 to 7), and for each channel up to 16 positions.
Incremental & View Function	ESC i (n)	This command is ignored.
n/216″ Backward Line Feed	ESC j (n)	$(0 \leq n \leq 255)$ If a request is made for a location outside the printer's logical page, the current cursor position is moved to the appropriate logical page limit.

Epson FX-80 Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Left Margin Set	ESC l (n)	$(1 \leq n \leq 137)$ n: depends on print mode. If a request is made for a speci- fied position outside the printer's logical page, the position is specified to the appropriate logical page limit.
P/S Character Print ON/OFF	ESC p (n)	n = 1, 49 ON n = 0, 48 OFF
Half-Speed ON	ESC s (n)	This command is ignored since print head speed is irrelevant.
8-pin Bit Image Mode	ESC * (n)	Prints about 1/5 page without expansion memory.
9-pin Bit Image Mode	ESC ^ (n)	Prints about 1/5 page without expansion memory.
Down Load	ESC & (n)	This command is ignored.
ROM CG Copy	ESC :	This command is ignored.
Down Load Character Select	ESC % 1	This command is ignored.
ROM CG Selection	ESC % 0	This command is ignored.
Paper Source	ESC EM (n)	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	ESC d (n)	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	ESC VP ESC VL	PORTRAIT LANDSCAPE

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Epson FX-80 Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Paper Source	//n//	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	//d (n)//	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	//P// //L//	PORTRAIT LANDSCAPE

The printable character set for the Epson FX-80 emulation ranges from 20_H to FF_H, within which standard ASCII characters are from 20_H to $7F_H$, and italic characters are from AO_H to FF_H.

IBM Proprinter

The printer commands are given in the table below. The ESC 6 code allows access to IBM Proprinter Character Set 2. The ESC 7 code returns back to IBM Proprinter Character Set 1.

IBM Proprinter Command Codes

FUNCTION	COMMAND	REMARKS
Cancel	CAN	
Condensed mode OFF	DC2	10 CPI
Enlarged OFF	DC4	
Condensed mode ON	SI	17.1 CPI (137 characters on one 8-inch line).
Enlarged ON	SO	
Carriage Return	CR	
Printer Select	DC1	
Printer Deselect	DC3	
Page End	FF	
Vertical Tab	VT	
Line Feed	LF	
Horizontal Tab	HT	
Backspace	BS	
Bell	BEL	
Null	NUL	
Underline Print Mode ON/OFF	ESC — (n) (minus)	n=1, 49 ON n=0, 48 OFF
Overscore Print Mode ON/OFF	ESC __ (n) (underline)	n=1, 49 ON n=0, 48 OFF
1/8″ LF Pitch Set	ESC 0	
7/72″ LF Pitch Set	ESC 1	
Start Variable Line Feed	ESC 2	Execution Command for ESC A
n/216″ LF Pitch Set	ESC 3 (n)	($1 \leq n \leq 255$)
Set Top of Form	ESC 4	When this command is received, the page is ended. Data after ESC4 is printed from the top of the next page.
Automatic Line Feed	ESC 5 (n)	n=1 CR, LF n=0 CR only
Select Character Set 2	ESC 6	
Select Character Set 1	ESC 7	
Elite pitch mode	ESC :	DC2 resets to 10 CPI.

IBM Proprinter Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Print Continuously from All Characters Chart	ESC \ (n)	(1 ≤ n ≤ 255)
Print Single Character from All Characters Chart	ESC ∧ (n)	
n/72″ LF Pitch Set	ESC A (n)	(1 ≤ n ≤ 85)
Vertical Tab Set	ESC B (n)	Max. 64 positions.
Page Length Set in Lines	ESC C (n)	Form length=Line spacing × n 6 LPI
Page Length Set in Inches	ESC C0 (n)	(1 ≤ n ≤ 14) If a request is made for a specified position outside the printer's logical page, the position is specified to the appropriate logical page limit.
Horizontal Tab Set	ESC D (n)	When the specified HTAB position crosses the current paper width, the data is ignored. The maximum tab number is 256.
Emphasized ON	ESC E	Double printing at 2/300″ spacing.
Emphasized OFF	ESC F	
Double Strike ON	ESC G	Double printing at 1/300″ spacing.
Double Strike OFF	ESC H	
Print Mode Select	ESC I (n)	n=0, Standard font, Normal print n=2, Standard font, Double strike print.
n/216″ Line Feed	ESC J (n)	(1 ≤ n ≤ 255)
480 Bit-Image Graphics Mode	ESC K (n)	Prints about 1/5 page without expansion memory.
960 Bit-Image Graphics Mode	ESC L (n)	Prints about 1/5 page without expansion memory.
Set Skip Perforation	ESC N (n)	This command is ignored.
Cancel Skip Perforation	ESC O	This command is ignored.
Deselect IBM Proprinter	ESC Q (3)	
Set All Tabs to Power On Settings	ESC R	
Super/Subscript Mode ON	ESC S (n)	n = 0, 48 Superscript n = 1, 49 Subscript
Super/Subscript Mode OFF	ESC T	
Unidirectional Printing	ESC U (n)	This command is ignored.
Enlarged ON/OFF	ESC W (n)	n = 1, 49 Enlarged ON n = 0, 48 Enlarged OFF

IBM Proprinter Command Codes (cont)

FUNCTION	COMMAND	REMARKS
960 Bit-Image Graphics Mode Normal Speed	ESC Y (n)	Prints about 1/5 page without expansion memory.
1920 Bit-Image Graphics Mode	ESC Z (n)	Prints about 1/5 page without expansion memory.
Download	ESC =	This command is ignored.
Paper Source	ESC EM (n)	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	ESC d (n)	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	ESC VP ESC VL	PORTRAIT LANDSCAPE
Paper Source	//n//	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	//d (n)//	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	//P// //L//	PORTRAIT LANDSCAPE

The printer commands are given in the table below. The ESC 6 code allows access to IBM Graphics Printer Character Set 2. The ESC 7 code returns back to IBM Graphics Printer Character Set 1.

IBM Graphic Printer Command Codes

FUNCTION	COMMAND	REMARKS
Cancel	CAN	Clears the printer buffer. Control codes, except SO remain in effect.
Condensed mode OFF	DC2	
Enlarged OFF	DC4	
Condensed mode ON	SI	17.1 CPI (137 characters on one 8-inch line).
Double Width ON	SO	
Carriage Return	CR	
Page End	FF	
Vertical Tab	VT	VT code treated as a LF.
Line Feed	LF	
Horizontal Tab	HT	
Bell	BEL	
Underline Print Mode ON/OFF	ESC — (n) (minus)	n=1, 49 Underline mode ON n=0, 48 Underline mode OFF
1/8″ LF Ptich Set	ESC 0	
7/72″ LF Pitch Set	ESC 1	
Start Variable Line Feed	ESC 2	Execution Command for ESC A
n/216″ LF Pitch Set	ESC 3 (n)	$(1 \leq n \leq 255)$
Select Character Set 2	ESC 6	
Select Character Set 1	ESC 7	
Paper Out Detection Disable	ESC 8	This command is ignored.
Paper Out Detection Enable	ESC 9	This command is ignored.
Home head	ESC <	This command is ignored.
n/72″ LF Pitch Set	ESC A (n)	$(1 \leq n \leq 85)$
Page Length Set in Lines	ESC C (n)	$(1 \leq n \leq 127)$
Page Length Set in Inches	ESC C0 (n)	$(1 \leq n \leq 22)$

IBM Graphic Printer Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Horizontal Tab Set	ESC D (n)	$(1 \leq n \leq 80)$ normal mode $(1 \leq n \leq 132)$ compressed mode. When the specified HTAB position crosses the current paper width, the data is ignored. The maximum tab number is 256.
Emphasized ON	ESC E	Double printing at 2/300″ spacing.
Emphasized OFF	ESC F	
Double Strike ON	ESC G	Double printing at 1/300″ spacing.
Double Strike OFF	ESC H	
Set Variable Line Feeding	ESC J (n)	n/216″ Line Feed $(1 \leq n \leq 255)$
480 Bit-Image Graphics Mode	ESC K (n)	Prints about 1/5 page without expansion memory.
960 Bit-Image Graphics Mode	ESC L (n)	Prints about 1/5 page without expansion memory.
Set Skip Perforation	ESC N (n)	This command is ignored.
Cancel Skip Perforation	ESC O	This command is ignored.
Super/Subscript Mode ON	ESC S (n)	n = 0, 48 Superscript mode n = 1, 49 Subscript mode.
Super/Subscript Mode OFF	ESC T	
Unidirectional Printing	ESC U (n)	This command is ignored.
Enlarged	ESC W (n)	n = 1, 49 Enlarged ON n = 0, 48 Enlarged OFF
960 Bit-Image Graphics Mode Normal Speed	ESC Y (n)	Prints about 1/5 page without expansion memory.
1920 Bit-Image Graphics Mode	ESC Z (n)	Prints about 1/5 page without expansion memory.

IBM Graphic Printer Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Paper Source	ESC EM (n)	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	ESC d (n)	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	ESC VP ESC VL	PORTRAIT LANDSCAPE
Paper Source	//n//	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	//d (n)//	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	//P// //L//	PORTRAIT LANDSCAPE

Diablo 630/630 ECS

The printer commands available in this emulation are given in the table below.

Diablo 630 Command Codes

FUNCTION	COMMAND	REMARKS
Bell	BELL	
Backspace	BS	
Carriage Return	CR	
Delete	DEL	This command is ignored.
Supplementary Character Select	EM	Access for one character selection when in 7-bit ECS mode.
Page End	FF	
Horizontal Tab	HT	
Line Feed	LF	
Null	NUL	
Shift In	SI	8-bit ECS mode blanks the character at 80H-9FH. 7-bit ECS mode selects primary character set.
Shift Out	SO	8-bit ECS mode unblanks the character at 80H-9FH. 7-bit ECS mode selects supplementary character set.
Vertical Tab	VT	
Top Margin Set	ESC T	
Bottom Margin Set	ESC L	The specified value of this sequence means the logical page length.
Top/Bottom Margin Cancel	ESC C	
Left Margin Set	ESC 9	
Right Margin Set	ESC 0	
Horizontal Tab Set	ESC 1	
Horizontal Tab Cancel	ESC 8	
Vertical Tab Set	ESC — (Minus)	
All Tab Cancel	ESC 2	
Lines/Page	ESC FF (n)	Page Size=VMI *n
Horizontal Movement Index (HMI) Set	ESC US (n)	HMI=1/120″ × n $(0 \leq n \leq 126)$
Default HMI Select	ESC S	
Move to Horizontal Absolute Position	ESC HT (n)	Hpos=HMI × n $(0 \leq n \leq 255)$
Auto Backward Print ON	ESC /	This command is ignored due to no mechanical carriage movement.

Diablo 630 Command Codes (cont)

| FUNCTION	COMMAND	REMARKS
Auto Backward Print OFF	ESC \	Same as above.
Auto CR/LF ON	ESC ?	
Auto CR/LF OFF	ESC !	
Reverse Print ON	ESC <	
Reverse Print OFF	ESC >	
Backward Print	ESC 6	Cleared by CR.
Forward Print	ESC 5	
Vertical Movement Index VMI Set	ESC RS (n)	VMI=1/48″ × n ($0 \leq n \leq 125$)
Move to Vertical Absolute Position	ESC VT (n)	Not returnable to preceding page due to cut sheet. VT=1/48″ × n ($0 \leq n \leq 648$)
Half Line Feed	ESC U	
Backward Half Line Feed	ESC D	Not returnable to preceding page due to cut sheet.
Backward Line Feed	ESC LF	Not returnable to preceding page due to cut sheet.
Graphic Mode ON	ESC 3	No print position change after text printing. (Cleared by CR.)
Graphic Mode OFF	ESC 4	ESC 3 mode cancel. Exit plot mode.
Red Ribbon Print ON	ESC A	This command is ignored.
Black Ribbon Print ON	ESC B	This command is ignored.
Print Suppress Start	ESC 7	Cleared by CR.
20H Code Designation	ESC Y	
7FH Code Designation	ESC Z	
P/S Character Print Start	ESC P	
P/S Character Print End	ESC Q	
Character Spacing Offset Set	ESC DC1 (n)	Spacing=1/120″ × n ($-63 \leq n \leq +63$)
Underline Start	ESC E	
Underline End	ESC R	
Boldface Overprint ON	ESC O	Double printing at 1-dot spacing. (Cleared by CR.)
Shadow Print ON	ESC W	Double printing at 2-dot spacing. (Cleared by CR.)
Boldface/Shadow Print OFF	ESC &	
Carriage Settling Time Extend	ESC %	This command is ignored.
Carriage Settling Time Extend Cancel	ESC N	This command is ignored.

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Diablo 630 Command Codes (cont)
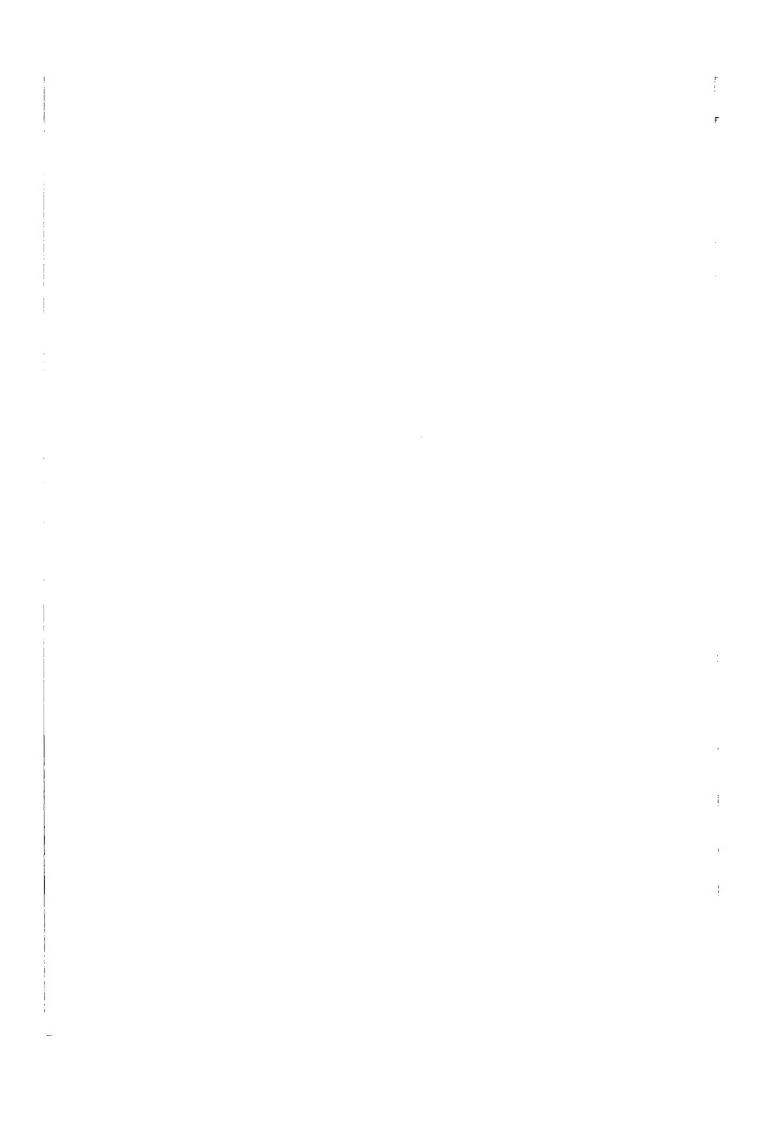
FUNCTION	COMMAND	REMARKS
Auto Justify	ESC M	
Auto Center	ESC =	Cleared by CR.
1/120" Backspace	ESC BS	
Program Mode Select	ESC SO M	This command is ignored.
Word Processor Mode Cancel	ESC X	
Envelope Feed ON	ESC EM E	
Tray 1 Feed ON	ESC EM 1	
Tray 2 Feed ON	ESC EM 2	
Page End Designation	ESC EM R	Causes same operation as FF code.
Printer Initialize	ESC SUB I	Power-on initialization.
Remote Error Reset	ESC SUB R	
Status Byte 1 Request	ESC SUB 1	In RS-232C I/F mode only. Printer always send NULL(0x00) code to host computer.
Status Byte 3 Request	ESC SUB 3	In RS-232C I/F mode only. Printer always send NULL(0x00) code to host computer.
Memory Test Request	ESC SUB SO	This command is ignored.
Hy Plot ON (Absolute Move)	ESC G	Cleared by CR.
Hy Plot ON (Absolute Plot)	ESC G BEL	Cleared by CR.
Hy Plot ON (Relative Move)	ESC V	Cleared by CR.
Hy Plot ON (Relative Plot)	ESC V BEL	Cleared by CR.
Change Plot Character	ESC. 'character'	
Set Plot Precision	ESC hv	
Parameter Initialize	ESC CR P	Initialization of print control parameters only.
Print Wheel Down Load Mode ON	ESC SO DC2	This command is ignored.
Toggles SRQ Line	ESC CAN	This command is ignored.
Remote Print Wheel Selection	ESC SYN (p)	This command is ignored.
X-ON/OFF Protocol	ESC GS A	Disables NAK.
X-ON/OFF Protocol	ESC GS B	Re-enables NAK.
Text Block End	ETX ACK	Only when ETX/ACK hand-shake is designated in RS-232C I/F mode.

Diablo 630 Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Paper Source	ESC EM (n)	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	ESC d (n)	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	ESC I ESC __	PORTRAIT LANDSCAPE
Select Font	ESC F (n) ESC FI (n) ESC FA (n) ESC FB (n) ESC G (n) ESC GI (n) ESC GA (n) ESC GB (n)	INTERNAL FONT INTERNAL FONT A FONT SLOT B FONT SLOT INTERNAL FONT & ADJUST SPACING INTERNAL FONT & ADJUST SPACING A FONT SLOT & ADJUST SPACING B FONT SLOT & ADJUST SPACING (n) indicates the selected font number.

Diablo 630 Command Codes (cont)

FUNCTION	COMMAND	REMARKS
Paper Source	//n//	n=1 TRAY 1 n=2 TRAY 2 n=E ENVELOPE FEEDER n=M MANUAL n=C SELECT TRAY1 THEN TRAY2 n=R EJECT THE CURRENT PAGE
Paper Size	//d (n)//	n=B LEGAL n=D LETTER n=P EXECUTIVE n=E INVOICE n=H A4 n=L B5 n=R COMMERCIAL 10 n=S INTERNATIONAL DL n=U INTERNATIONAL C5 n=M MONARCH 7 3/4 n=G AFSP
Orientation	//|// //__//	PORTRAIT LANDSCAPE

Select Font	//F (#)//
	//FI (#)//
	//FA (#)//
	//FB (#)//
	//G (#)//
	
	//GI (#)//
	
	//GA (#)//
	
	//GB (#)//
		INTERNAL FONT
		INTERNAL FONT
		A FONT SLOT
		B FONT SLOT
		INTERNAL FONT & ADJUST SPACING
		INTERNAL FONT & ADJUST SPACING
		A FONT SLOT & ADJUST SPACING
		B FONT SLOT & ADJUST SPACING
		(#) indicates the selected font number.

— MEMO —

— MEMO —

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